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# THE **C**ONDOR

A Magazine of Western  
Ornithology



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Number 2



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# THE CONDOR

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# THE CONDOR

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WESTERN ORNITHOLOGY

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VOLUME XXXVII

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## NESTING OF THE DUSKY POOR-WILL

WITH SIX ILLUSTRATIONS

By ELMER C. ALDRICH

To have any bird unexpectedly flush from beneath one's feet is a thrill; to have a bird unexpectedly flush from beneath one's feet, exposing a nest, certainly is a greater thrill; but to have a bird such as the Poor-will, with its exceedingly interesting habits, quickly and silently unmold itself from its perfectly harmonizing surroundings and fly away, exposing two eggs, produces the acme of thrills, especially if the find entails many pleasant hours of subsequent observation.

On July 5, 1934, at 7:30 p. m., the writer with seven boys from a recreation camp had such an experience on a north-easterly ridge about three-fourths of a mile from Longbarn, Tuolumne County, California, where the nest of a Dusky Poor-will (*Phalaenoptilus nuttallii californicus*) was found. The altitude was about 5600 feet, and the general vegetation of the area consisted of yellow pines, incense cedars, white firs, black oak islands, a few species of ceanothus, and a little manzanita, with mountain misery covering most of the open hillside.

The immediate location of the nest was in a little circular clearing about fifteen yards in diameter, surrounded by young yellow pines closely knit together by small, interwoven branches. The clearing contained three manzanita bushes and one ceanothus bush. The greater part of it was strewn with long dead pole-like logs, which appeared to be one of the basic requirements for the Poor-will's protection. The entire north side of the opening was bordered by a large decayed log of a diameter of three feet, which, because of common use by the Poor-will, came to be called "the log."

The nest was found when we were coming from the north and upon advancing four yards after stepping over this log. When the adult flushed from the nest the observer's foot was but eighteen inches from the site. The bird flew across the clearing into the edge of the dense forest, where it lit on a small log and watched without movement for fifteen minutes while pictures of the two light buff eggs were obtained.

Before leaving, a test was made to see how close the observers could approach the parent on the log. It flushed when approached within five yards, and flew onto a boulder some ten yards away. Without disturbing the bird further, the observers left to return at about 9:15 p. m. The parent was on the nest and the large eyes, with several flashlights turned on them, shone like fire klunkers in the darkness. Cautiously the eight observers managed to approach within two feet, while the bird sat tight all the time. Fearing that not another chance would be had to photograph

the parent on the nest, a few pictures were attempted with 18 to 30 seconds exposure under a battery of five ordinary flashlights. The only movement was the blinking of the shaggy eyelids about every 30 seconds. It was found that loud 'talking' did not disturb the sitting bird, but a slight shuffle of the observers' feet, or the crackle of a twig, caused it to stir on the eggs. After three-quarters of an hour of such close scrutinizing, the bird won "her" (sex undetermined) instinctive attempt not to expose the conspicuous eggs.



Fig. 7. Dusky Poor-will incubating eggs placed on ground at base of manzanita bush. The log used frequently as a perch is shown in the background.

The next morning's visit was decidedly more interesting, because it marked the maximum amount of fearlessness presented by the parent birds during the study. While within about twenty yards of the nest, one of the parents flushed from a log and flew out of sight. Expecting this to be the incubating bird, the approach was made carelessly. When within several yards the other parent was noticed on the nest, so advance was made more slowly. When we were but three feet from the nest, the bird's large clear white spots on the tail identified it to be the male that was doing the incubating. Many pictures were taken, some as close as ten inches, without the slightest sign of fear on the part of the sitting bird. Under such supposedly ideal conditions, however, great difficulty was had in obtaining the exact pictures wanted, because the bird closed his eyes, and much noise would have to be made to get him to open them even slightly. Experiments were made to find the extent of his "bravery" by touching him. While touching the head the first time he flattened out his wings and spread the fan-like tail over the tips of them showing all the tail spots. The large head was then brought far back on the shoulders, the

cavernous mouth opened extremely wide showing the pink interior, and a low guttural hiss was emitted at short intervals. Very tensely excited at seeing this display at such a close range, the observers were encouraged to see how much further these queer actions might be extended. Several strokes of the back and head produced a slightly different effect. He remained in the flattened position, stopped hissing, and moved sideways, exposing part of one egg. Touching him again caused him to slide completely off the eggs, where he remained for part of a minute with



Fig. 8. The Poor-will with half-opened eyes sits in "frozen" position, concealing the otherwise conspicuous eggs.



Fig. 9. When touched, the bird slid partly from the nest, giving its intimidation display. The large, clearly-defined white areas of the tail show the bird to be the male.

the tail still spread and both the wings held vibrantly straight up into the air. Suspecting that further disturbance might cause desertion of the nest, we ended the visit.

Returning again at dusk we found the eggs uncovered but warm. The eggs were "candled" with a flashlight and they showed no development. Waiting in a concealed spot for seventeen minutes resulted in no return of the parents. Probably they were feeding in one of the much larger, near-by clearings where more insects were present at crepuscular hours.

A visit to the nest the following morning showed a slight decline in the fearlessness of the bird in attendance. While about ten yards from the nesting site, the writer was struck with amazement at the protecting element given to the parents. Neither the eggs nor the parent could possibly be discerned at this distance with the unaided eye, but with binoculars the disjointed outline of the sitting parent could be made out. When touched this time, the male, which was on the nest, acted about the same as on the last visit, but when annoyed further, he flushed, to alight just over the log, and out of sight.

The nest was revisited the same day at 2 p. m. The sitting bird took off from the eggs when a careful approach brought us no closer than three and one-half feet. This time it was believed to be the female, for the spots on the tail were inconspicuous in flight. She lit out of sight just over the log, and the observer immediately seated himself in plain sight of the nest five yards away, to determine the rate and method of recovery from the disturbance. Exactly ten and one-half minutes marked the reappearance of the same bird. She had flown from behind the log nearly to the top where she could barely look over and observe the surroundings. Immediately she started swaying from side to side very slowly and rhythmically for about five seconds before walking to the top of the log, each step in synchronization with the swaying. Here she paused for about twenty seconds, and then flew a few yards, within two and one-half feet of the nest, where she began swaying again. The rest of the distance to the nest was accomplished by this slow walking-swaying process, and she did not seem to get anxious and speed up as she came closer. Two short stops were made on the way. Always the bird was so close to the ground that her feet did not show, and the sideward movement was always started about five seconds before any walking was done. When her breast was almost touching the eggs she nestled down and waited a few seconds and then one by one she pulled the eggs underneath her with the short wide bill. After she had finished this laborious task in the hot sun, she opened her bill and proceeded to pant, the contrasting white collar on her throat vibrating like a tiny flag in the wind.

A slight movement on the part of the observer caused her to flush, with a mellow note, *awerk*, and alight facing him about ten yards away. While waiting to see her second approach, the observer's attention was distracted by a loud whirring of wings and a rustle in the low limbs of the pines on the opposite side of the clearing. The intruder was an adult goshawk that spread its tail a few times and then winged its way across the canyon on the right. Looking back to observe the Poor-will's reaction to this, the watcher saw that she had faded into the background. Standing up to find the Poor-will caused her to take off through the trees and out of sight.

The next day, the closest approach made was within four feet. From then on, the birds became more wary, and a wait of half or three-fourths of an hour did not induce either of them to return and sit on the eggs.

A visit to the nest on July 13, almost exactly eight days after the nest was found, showed one of the eggs to have a slight hole in it, and the other one to be cracked in several places. While waiting from quite a distance the Poor-will flew

within fifteen inches of the nest, where she stood watching the eggs for about a minute and then suddenly flew off and out of sight, uttering a series of liquid *werk, werk* notes. While we were leaving, the bird flew near us and back to the clearing. At 9:30 the same evening the sitting bird took off, first giving the solicitous *werk* notes and then breaking into the *poor-will-o, poor-will-o* notes as it flew to a larger clearing near-by. Little progress in hatching was shown by the eggs. By noon the next day one young was completely out and fully dry. The other egg had quite a large hole in it, and the inhabitant of it was squeaking vigorously, every note being answered by a similar cheep from the young already out. As the incubating bird flushed disclosing this progress in the hatching, she lit on the log fluttering her wings and



Fig. 10. Eggs of the Poor-will in natural position in the nest depression.

opening her mouth for part of a minute, and then flew to a near-by boulder. The precocious young was about two and one-half inches long when stretched out. The down that covered it was a rich buff, and the short tarsus and foot were light grayish flesh color. The eyes were black and the nostrils already formed external tubes on top of the upper mandible, as in the case of the adults. Several red ants were chased away from the pipped egg. About one-third of the shell from the already-hatched young was still in the nest; the rest was nowhere to be found. Evidently the parent had neglected to remove this piece.

The next morning, July 15, unfortunately was the last day observations could be made. At about ten yards from the nest, a look through binoculars revealed one of the fluffy young looking out from beneath the breast of the brooding male. When the observer came a little closer, the old bird took off, showing that the other egg had hatched. The adult then flew to the log and with vibrant outspread wings gave the *werk, werk* notes frequently. The older young already seemed much larger than the new one, which could not have been out much more than two hours, for spots underneath the wings and on the back were still wet. Its eyes were open and it seemed very weak. The older one was active, and when put in the sun it would hobble back to a strip of shade cast by the manzanita bush.

The protective equipment of the Dusky Poor-will is rather intricate. In the first place, the variegated dark coloration was concealing in many conditions presented by this clearing. The best protective background seemed to be a "tie" between the

dark dead logs, where the Poor-will, if present, looked exactly like a broken off limb; also effective was the ground where there were dark pine needles, and light and dark manzanita leaves along with the shadows and bits of bark. The bird could absolutely fade into these two types of background. Occasionally the Poor-will lit on a large boulder. The rock was slightly lighter in color than the bird, but unless one was looking in that particular place he might pass by unconscious of the Poor-will's presence. The birds were always careful to make no movement while concealed in these places.

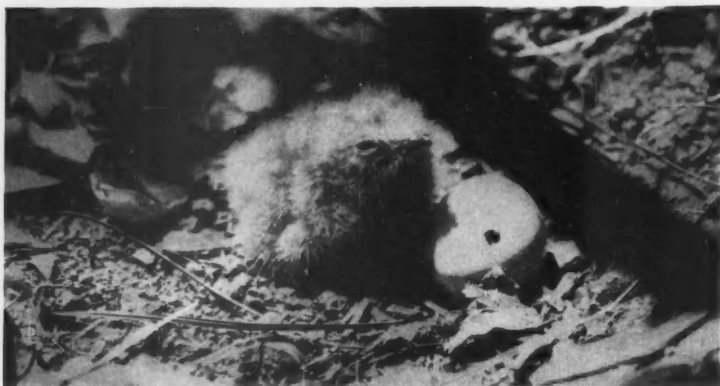


Fig. 11. One young hatched and the remaining egg pipped. Part of the broken egg-shell shows at left.



Fig. 12. The second young Poor-will hatched a day later. It is shown on the right, still slightly wet.



From these facts it seems that the Poor-wills chose the site best suited for protection of the eggs. In view of the fact that the young liked shade, another requisite for a nesting site might be protection from the sun. One first thinks that better shade could be secured beside a large fallen log. The writer believes that the patchy shade offered by the manzanita is far more valuable to the protective coloration scheme than solid shade. It also seems that more searching predators would follow along the side of a log. A wider angle of observation would also be gained in the center of the clearing.

With comparatively short periods of observation, the results pointed toward the fact that the male did most of the incubating and brooding. Of course watching of the nest for the whole time would be necessary to establish this, for maybe the male and female indulged in shifts. Incubation must have started when the first egg was laid, for the second young bird hatched more than a day after the first.

The fact that only natural noises perturbed the incubating bird caused the observer to try a few experiments. First, loud talking, laughing, and clearing the throat were tried while he was standing within a few yards of the parent on the nest. The bird seemed almost asleep, and no noticeable reaction was obtained, perhaps because it had not learned to fear human intrusion. Then, crackling of sticks, imitation of Horned and Spotted owls (both in that region) were tried. The noise of the breaking wood was the most effective, causing the bird to open its eyes widely and settle more closely on the eggs. It probably had learned to fear surface lurking animals most. Though the reaction to the Horned Owl note might have been lessened by the response to the first experiment, the hooting caused him to open his eyes again. The Spotted Owl call did not have much effect, perhaps due to poor imitation, but it caused him to open his eyes just enough to be able to see. This might show that the Poor-will has some fear of owls, the Horned Owl being the worse of the two mentioned.

*Oakland, California, November 20, 1934.*

## NESTS OF HORNED LARKS AND LONGSPURS ON A MONTANA PRAIRIE

WITH FOUR ILLUSTRATIONS

By A. DAWES DuBOIS

The observations here recorded relate to the nests of three species of terrestrial birds, the Desert Horned Lark, McCown Longspur, and Chestnut-collared Longspur, which are closely associated during the breeding season on the prairie bench lands of Montana. The data cover a period of four years beginning in the fall of 1914, and are limited to a locality known as the Teton Slope, in the prairie portion of Teton County, Montana, lying east of the Rocky Mountains. In all, 141 nests belonging to these three species were inspected. Some of these were marked as observation nests and were revisited as opportunity permitted. Others were not revisited but yielded comparative data on such items as situation, concealment, structure, egg complement, and date of nesting.

The writer was absent from the locality during the last part of the nesting season for the first year (after June 24). Storms caused extensive destruction of nests and interruptions in the nesting cycles. The dates of the most destructive storms were as follows:

First year (1915), cold rain (36 hours), ceased June 4.

Second year (1916), began as rain May 24, deep snow May 25, snowstorm ceased May 26.

Second year (1916), three-day rainstorm ceased June 23. (Killed all known nestlings, of all three species.)

**Organization of Data.**—The data here presented are arranged under the following heads, in the order shown:

(1) *Table of Nests*: The main table, for each species, serves as a complete index of all nests found, and shows the nesting date and the complement so far as known.

(2) *Progress Supplement*: This is a condensed record of the progress of nest building, laying, and other items, in which are recorded such additional visits to observation nests as could not be included in the table. Some nests, visited only once are included, to show data not reported elsewhere.

(3) *Additional Data*: Items not otherwise provided for.

(4) *Topical Notes and Summaries*: Each summary contains descriptive notes upon one topic for various nests. The numerals, referring to particular nests, make it possible to correlate different topics for a given pair of birds.

**Notation.**—Dates in the tables are shown by numbered month and day (thus: 5-8 means May 8).

Dash (—), in column 4, indicates nest was not revisited; in other columns, information not available.

Asterisk (\*), in column 4 refers to Progress Supplement for further dates and contents.

Stage of incubation (column 6) is given approximately in per cent. (Thus: 0 = fresh; 50 = about half; 90 = nearly ready to hatch.)

Date of laying final egg of clutch is marked *K<sub>n</sub>*, if known by actual observation; *Est.*, if estimated from observed state of young or stage of incubation.

Letter symbols (used in tables and supplements): *e*, eggs; *g*, gathering nest material; *i*, parent bird in nest; *n*, nest; *o*, empty (a new nest); *p*, nest in process of construction; *x*, not known; *y*, young; *z*, abandoned.

Reference numbers, used in the summaries, refer to the nest numbers assigned in column 1 of the table. Letters (*a*, *b*, *c*, etc.), similarly employed, refer to the notes following the summary. In the notes, all reference numbers are the nest numbers of column 1 of the table.

## DESERT HORNED LARK

The following table of fifty-eight nests of the Desert Horned Lark (*Otocoris alpestris leucolaema*) shows the nesting date and complement for each nest (so far as known). The headings of the columns are self-explanatory.

Nest No.	First observation		Final observation		Incubation	Complement	Date of laying final egg (known or estimated)	Nest No.	First observation		Final observation		Incubation	Complement	Date of laying final egg (known or estimated)
	Date found	Contents	Date	Contents					Date found	Contents	Date	Contents			
1	1915							1	6-5	3e	6-7	3e	30	3	6-4 Est.
2	4-16	3e	4-18	3e	10	3	4-16 Est.	31	6-5	3e	6-6	4e	10	4	6-5 Est.
3	4-17	p	5-8	z				32	6-5	4e	6-6	4e	20	3	6-4 Est.
4	4-26	3e	*			3	5-5 Kn.	33	6-6	3e					6-12 Kn.
5	4-28	o				2	4-19 Est.	34	6-7	p					6-2 Est.
6	4-28	3e	4-29	3e	10	3	4-28 Est.	35	6-13	3y					
7	5-5	3y	*			3	4-29 Est.	36	6-13	o					
8	5-6	3e				3	4-29 Est.	37	7-6	3e			50	3	7-1 Est.
9	5-8	2e	5-9	o		3	5-6 Est.	38	7-7	2e				3	7-8 Kn.
10	5-14	3y						39	7-19	2y					6-29 Est.
11	5-15	3y				3	4-29 Est.	40	4-21	3e			20	3	4-19 Est.
12	5-19	3y				3	4-29 Est.	41	4-26	4e			0	4	4-26 Est.
13	5-20	3y				3	5-6 Est.	42	4-26	4e			10	4	4-25 Est.
14	5-20	2e	5-21	3e	0	3	5-21 Kn.	43	5-7	4e			0	4	5-7 Est.
15	5-22	3e			30	3	5-19 Est.	44	5-8	4e			0	4	5-8 Est.
16	5-23	3e			0	3	5-23 Est.	45	5-17	4e			30	4	5-14 Est.
17	5-27	3e			30	3	5-24 Est.	46	5-15	4e					
18	5-30	4e	5-31	4e	10	4	5-30 Est.	47	5-23	2e					
19	5-31	p	*			4	6-13 Kn.	48	6-3	4e				4	6-3 Est.
20	5-31	p	*			3	6-3 Kn.	49	6-29	2e			3	6-30 Kn.	
21	6-16	2y					6-2 Est.		1915						
22	6-21	3e			90	3	6-12 Est.	50	3-25	p					
23	6-25	3e	*			4	6-23 Kn.	51	4-10	3e	4-12	3e	10	3	4-10 Est.
24	4-14	p	*					52	4-10	o					
25	4-19	3e	4-22	3e	30	3	4-18 Est.	53	4-18	3e	4-20	4e	0	4	4-19 Kn.
26	4-26	p						54	5-2	2e				4	5-4 Kn.
27	5-16	3e			80	3	5-3 Est.	55	5-22	3e			60	3	5-14 Est.
28	5-29	3e	5-29*		30	3	5-26 Est.	56	6-4	3e				3	6-20 Est.
29	6-2	3e	6-5	3e	30	3	6-2 Est.	57	6-29	3e					
30	6-3	3e	6-5	3e	20	3	6-3 Est.	58	7-2	4e	7-4	4e	20	4	7-2 Est.

## PROGRESS SUPPLEMENT

Nest 3.—About Apr. 17, *op*; 28, some soft material added in loose condition; 29, loose material pressed down into place; May 3 (9:30 a. m.), *1e*; (7 p. m.), *1e* surrounded with loose soft weed material (yarrow) not matted down; May 4 (7 a. m.), *2e* and no loose material; (7 p. m.), *2e*, have a few loose yarrow pods around them; 5 (8:30 a. m. and 7:30 p. m.), *3e*; 8, 9, 10, 13, 14 and 15, *3e* (birds never seen until May 8); 16 (7:30 p. m.), *3y*; 18, 19, 20, 23, *3y*; 25 (9 a. m.), nest empty but 2 young six and ten feet away (parents not seen); 25 (evening), nest partially torn out. Incubation period 11 to 11½ days. Nestling period 9 days.

Nest 4.—Apr. 26, *3e*; 28, *3e*; 29, *3y*; May 2, nest empty, no clue.

Nest 7.—May 5, *3y*; 6, *3y*; 8, 3 *y* about ready to leave; 9 (morning), *n* empty, (evening) same.

Nest 8.—May 6, *3e*; 7, 8, 9, 10, 13, 14, 15, ditto; 16 (7:30 p. m.), *2e*, *1y* not yet dry; 17 (8 a. m.), *1e*, *2y*, (5 p. m.), *3y*; 18, 19, 21, ditto; 22, one nestling died; 25 and 27 (8 a. m.), *2y*; (11 a. m.), nest empty. Nestling period about 10 days.

Nest 12.—May 19, *3y* feathered and able to run (not revisited).

Nest 19.—May 31 (8 a. m.), excavation apparently completed; June 5, portion of nest material in place, wet with rain, about half finished; June 10 (8 p. m.), *1e* and 2 or 3 loose pieces of gray heads of yarrow in nest (*n* finished); 12 (10:30 a. m.), *3e*; 13 (9 a. m.), *4e*; 15, *4e*.

Nest 20.—May 31, *p* (about finished); June 1, *1e*; 2, *2e*; 3, *3e*; 5, ditto (kept dry through storms); 6, 10, 12 and 14 (10 a. m.), *3e*, (5 p. m.) *3y*; 19, 21, 22 (evening), *3y*; 23, young left early this morning. Incubation period 11 days. Nestling period scant 9 days.

Nest 23.—June 23 (about 8 a. m.), 3e, (about 9 a. m.), 4e; 24, 4e, the last egg smaller than other three.

Nest 24.—Apr. 14, n about half built; 16, not much more; 22, empty and apparently abandoned.

Nest 26.—Apr. 26, n almost finished; 28, empty; May 1 and 8, evidently deserted.

Nest 28.—May 29, 3e, cold, nest wet, evidently abandoned because of snowstorm.

Nest 34.—June 7, excavation found (birds near); 8, some nest material loosely in place in hollow, and a few large mud pellets on grass in front of nest; 10, one egg in nest and more pellets added; 11, 2e with 2 or 3 loose straws thrown over them; 13, 3e (clutch doubtless completed on 12th); 19, 3e; 23, 3e but nest wet in bottom; 25, empty and bottom somewhat torn up.

Nest 35.—June 13, 3y just recently hatched; 19, y rather well feathered; 23, 3y all dead, wet (storm).

Nest 36.—June 13, o (seems finished); 19, ditto; 25, n in water.

Nest 38.—July 7 (evening), 2ei; 8 (early a. m.), 3e; 9, 11, 12 and 16, 3e; 17, 2e and 1y hatched this evening; 18 (morning), 2e, 1y; (evening), ditto; 19 (early morning), 1e, 2y; (evening) ditto; 20, ditto (one egg infertile); 21, 22, 23, 2y; 25, one nestling taken by weasel; 27 (night), 1y; 28 (morning), nest empty; 29 (morning), saw young following mother. Note: Incubation may have started when first egg was laid, as bird was observed sitting on two eggs July 7. Incubation period 11 days. Nestling period about 10 days.

Nest 48.—June 3, 4e (fresh looking); 5, 4e; 19, empty (y had left?).

Nest 49.—June 29, 2e; 30 (afternoon), 3e; July 1, 6, 8 and 9 (8 p. m.), 3e; 10 (7 p. m.), 3y dry; 13, 2y (parent observed driving some small animal away from nest); 14 and 15, 2y; 18 (7 p. m.), n empty, young not seen. Incubation period 10 days.

Nest 50.—Mar. 25, cavity in earth finished but empty; 27, a few lichen-covered pellets of baked mud at east side, some of which had fallen into cavity; 29, ditto; Apr. 6 and 15, ditto (had been abandoned, no nest material in cavity).

Nest 54.—May 2, 2e; 3 (morning), 3e, (evening), 3e; 4 (7 a. m.), 3e; (8:30 p. m.), 4e; 13, 4e; 14 (morning), 2e, 2y; (evening), 1e, 3y; 15 (morning), 4y; 20, 4y; 23, 24 and 26 (morning), 1y, (evening), nest empty (young left nest). Incubation period 10 days. Nestling period 12 days.

Nest 56.—June 4, 3e; 7, nest torn out, 2 eggs near, no clue.

Nest 57.—June 29, 3e; 30 (5 p. m.), 3 y; July 2 and 3, 3y; 5, nest empty, no clue.

#### TOPICAL NOTES AND SUMMARIES

**Nesting Dates.**—The date of laying the last egg (start of incubation) is used for comparisons of nesting dates. This was either known or could be closely estimated for forty-seven nests.

The earliest observed dates for full sets were: April 16, 18, 19 and 10, in the four successive years. The next year, a farmer boy reported three eggs on April 17. In the second year a neighbor reported a nest with four eggs on April 13; and another neighbor said he found a young bird out of the nest, but unable to fly, on April 26, indicating that incubation had started about April 6.

The distribution of the dates is shown in the following table, in which the figures indicate the number of known sets completed in the first, middle and last third of each month.

Four-year Summary of Nesting Dates

Month	Period	First year	Second year	Number of nests		Fourth year	Total
				Third year			
April	First third					1	1
	Middle third	2	1	1		1	5
	Last third	5		2			7
May	First third	3	1	2		1	7
	Middle third	1		1		1	3
	Last third	4	1				5
June	First third	2	6	1			9
	Middle third	2	1			1	4
	Last third	1	1	1			3
July	First third		2			1	3

Two peaks of nesting activity occur, one about the end of April, the other early in June, indicating two broods in a year. These two natural periods of activity would appear more pronounced were it not for destructive storms and the depredations of natural enemies. The latest date recorded for fresh eggs was July 8, when a clutch of three was completed (n. 38). The one surviving nestling of this family remained in the nest until the 28th.

**Progress of Nest Building and Laying.**—In some instances the nests are carried rapidly to completion, while in others there is much delay. Nest 34 was built in about two days, after the excavating had been done; and the first egg was laid as soon as the nest was ready. At nest 19 there was a delay of at least ten days between the completion of the digging and the laying of the first egg. The nest appeared about half finished on the fifth day after the excavation was found. In another case (n. 3) egg laying was delayed for sixteen days after the nest was apparently ready to receive eggs. The birds added some soft material to the empty nest five days before the first egg was laid.

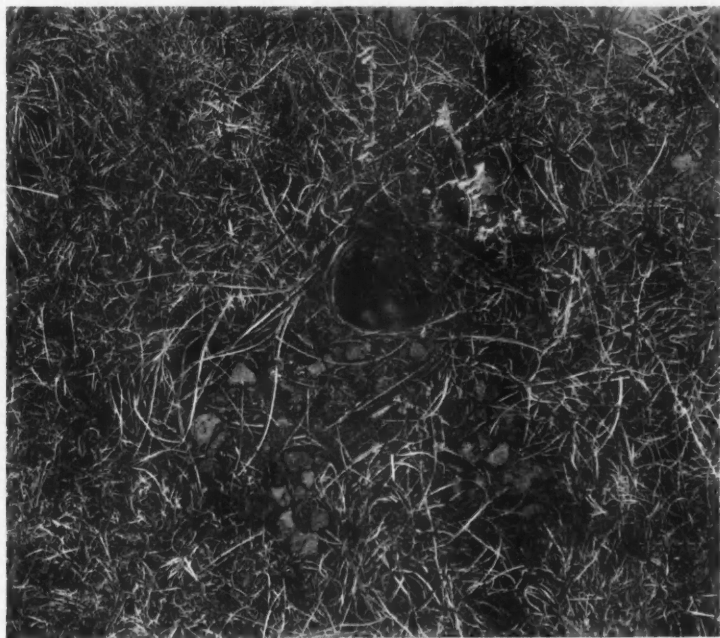


Fig. 13. Nest of Desert Horned Lark, showing baked mud pellets in position and a small yarrow plant overhanging on the northwest; nest 14, May 21, 1915.

Some of the customary pellets of baked mud at the nest entrance occasionally are put in place before the grass nest structure is built. This was the case at nest 34, the excavation for which was found, with both birds near, before any nesting material had been put into it. By the next day some nest material had been loosely left in

the hollow, and a few large pellets of sun-baked mud had been placed on the grass in front of the nest. After two more days there was an egg in the nest, and a few more mud pellets had been added. After the second egg had been deposited the two eggs were found to have two or three grass straws placed loosely over them.

In all observed instances the eggs were deposited at the rate of one egg each day. Incubation normally began when the last egg of the clutch was laid.

**Complement.**—The complement of eggs is either three or four, depending, possibly, upon weather conditions as well as upon individual proclivities. The count of full sets observed was as follows: first year, 3 sets of four and 16 sets of three; second year, 1 set of four and 11 sets of three; third year, 7 sets of four and 2 sets of three; fourth year, 2 sets of four and 5 sets of three. In the third year, when the proportion of large sets showed remarkable increase, the spring was unusually wet and cold.

**Period of Incubation and Nestling Period.**—The normal period of incubation is 10 or 11 days, as indicated by the data from five nests (nos. 3, 20, 38, 49, 54). The nestlings remain in the nest from 9 to 12 days after hatching, as shown by the dates for five nests (nos. 3, 8, 20, 38, 54).

**Situation.**—The Desert Horned Larks avoid the more luxuriant growths which are to be found in moist situations. They prefer the dry bench lands. There is no special preference as to surface contour so long as the situation is a dry one. Nests occur on knolls or slopes, or in the dry depressions of the benches. The following exemplify rather unusual situations: One nest in the higher part of a low meadow in which Chestnut-collared Longspurs were nesting (32); one at the edge of a large meadow; another in a small meadow which, however, had become quite dry (51); and one on the slope of a coulee bank (11).

The number of nests which one finds near old dried droppings of horses, and sometimes of cattle, seems much greater than the laws of chance would account for. Five nests were especially mentioned as having none near them (b), but numerous others had droppings within a few feet. The first nest was about twelve inches from a hillock of dried horse dung (1); and two nests were situated at the very edge of such material (a). These slight elevations serve as convenient lookout stations; the birds frequently stand upon them.

The fencing off of new roads, and the vehicular travel on them, do not prevent the use of desired nesting spots. A nest may be close to a fence (28), or in undisturbed sod in a roadway (54). One pair of larks built a nest only a few rods south of my cabin (38).

Only one nest was found in a cultivated field (55). This, the home of a bird pioneer, merits more than passing mention. It was in a field of young spring wheat which stood in drills, about two inches tall, the ground being otherwise bare. The nest was sunk, in the usual manner, in the soft cultivated soil. There was a sprig of young wheat a few inches high at the edge of it on the west. Some loose bits of old wheat stubble were strewn at the east side, and several bare pellets of earth (without lichens) were arranged on the northeast side. The nest was composed of old, dead grass and rootlets, with the lining-grass somewhat shredded, and with a few bits of soft plant-down at the bottom.

**Notes.**—(a) 23, 24. (b) 6, 29, 30, 32, 58. In fenced pasture (21, 39, 56, 57, 58). Few feet from edge of wheat field, in prairie sod (29).

**Concealment.**—The prevailing short grasses of the bench lands do not afford much cover. The concealment of nests in general, so far as the surrounding grass



is concerned, is very incomplete, sometimes quite meager. Nevertheless, the nests are not easy to see. In most cases there is some protection from grass on the west side; sometimes it slants over the nest, owing to the prevailing winds.

A slight bunch of buffalo grass may project somewhat over the west side, or a little yarrow plant may overhang (14). Occasional nests are not at all protected on any side. Six nests among those recorded were remarkable for the openness of their situations. Two in virgin prairie had scarcely any grass around them; two were in a fenced pasture which was very closely cropped by horses and cattle. Five nests were but slightly protected on the west by a scant clump of vegetation; one was rather well hidden by a thick tuft of dead grass which curved over it from the west (53); another was sheltered on the west by a thick, compact tuft of short grass (19); one was scantily surrounded by tufts of blue-joint (31); and one was situated in the midst of a small thick tuft which protected it somewhat on the south, west, and north (29).

Notes.—Protected on west: (41, 42); small bunch buffalo grass (6, 24, 25, 30); very slight tuft and weed (28); well protected on west and southwest (18). Scantily surrounded: (37); chiefly on west (32); except northeast, thickest tuft southwest (33); overhanging (44). In very short grass, hay cut last fall (51). Scarcely any grass: no clump on west (22); no protection, but mud pellets on east as usual, grass at west possibly eaten by stock after nest was built (17).

Excavation.—The nest is invariably built in a rounded hollow in the ground,

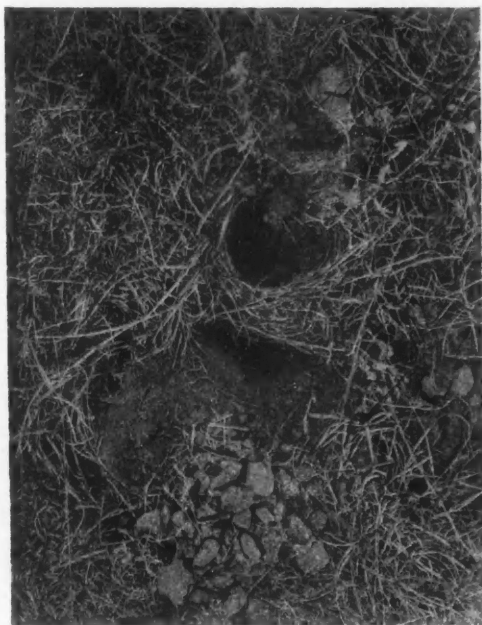


Fig. 14. Same nest as shown in figure 13, with pellets lifted and loose fine dirt removed from the cavity at the entrance side of nest; May 21, 1915.

which is evidently scratched out by the birds, the excavated dirt in the form of fine scratchings being thrown out to one side of the nest. This dirt is almost always on the east side, which is also the side least protected by vegetation.

Usually the top of the nest structure is flush with the ground surface. Of fifteen nests where this feature was noted, seven were so recorded (a) and four more were almost flush (b). The grass rim of one nest projected above ground a half inch or more (42). The other three were only about half sunken and each of these possessed some further peculiarity. One of them was in a thick tuft of grass which doubtless made the digging difficult (29), another, which projected about an inch, had a little mound around it, built up by the birds (37), and the third, sunk a little more than half its depth, had a few scratchings of earth to the southeast, and only a few bits of dried mud in irregular lumps instead of the usual flat chips (53).

Notes.—(a) 1, 6, 15, 18, 23, 28, 32. (b) 30, 33, 51, 58.

**Materials of Nest Structure.**—The materials used for the body of the nest are dead grasses, including both stems and blades, usually without any other materials. In one nest the dried grasses were all rather fresh (43); but in eight others they were old (b) and more or less weathered (c). Fifteen of the nests were noted simply as "dried" or "dead" grass, the material being neither remarkably new nor old (a). One nest was made of grasses and weed stems some of which were partly decayed (28). The nest structure built by the pioneer on cultivated land contained rootlets together with old dead grass (55).

Notes.—(a) 1, 14, 15, 16, 17, 18, 22, 23, 25, 29, 30, 37, 40, 41, 53. (b) 19, 32, 33, 42, 44, 45. (c) 27, 51.

**Lining.**—The linings display more individuality. Dried grass forms the principal lining of all nests, but it is usually supplemented with other materials. Thirty nests in which the lining was particularly examined might be grouped thus: (A) no other substance than grass in the lining (2 nests); (B) only one substance in addition to grass (24 nests); (C) two substances in addition to grass (3 nests); (D) three substances in addition to grass (1 nest).

In the two nests of group A, dead grasses, mostly old and weathered, formed the only lining (a).

In group B, one nest had merely the addition of a single bit of rag from my cabin yard (28); another had some tiny bits of rabbit fur (25); two contained some soft, silky, white plant down (b); and a fifth had other soft plant fibers (37). The remaining nineteen of this group contained seed pods, heads, tips or leaves of yarrow (c). The typical lining is dried grass with the addition of some bits of yarrow, which, when dried, are gray or white, and of soft, velvety texture.

The three nests of group C contained bits of yarrow as the second substance. The third substance was in one nest, a tiny bit of wool (6), in another, some white hairs of the jack rabbit (1), and in the third, a few bits of white fluffy down from some cottony weed seeds (19).

The nest in group D was lined with dried grass, yarrow, soft plant fibers, and skeletonized bits of plants (15).

All four nests of the last two groups contained the yarrow, making a total of 23 nests containing this plant out of a total of 30 nests reported. In one nest the yarrow leaves were partly fresh and green (19). It is noteworthy that no horse hairs or cow hairs were found in any nest; the small bits of wool and rabbit fur were the only animal substances observed. As for the condition of the grass used in the linings, in the majority of nests it was neither remarkably old nor new. In six nests it was old and weathered (d); five contained shreds of old grass (f); one was

lined with grass which was newer than that of the main nest structure (27). In one instance the lining grass was in short bits (14).

Notes.—(a) 51, 58. (b) 30, 55. (c) 3, 14, 16, 17, 18, 22, 23, 27, 29, 31, 32, 33, 40, 41, 42, 43, 44, 45, 53. (d) 19, 32, 33, 42, 45, 51. (f) 18, 43, 53, 55, 58.

**Orientation.**—There is remarkable uniformity in the direction in which the entrances to the nests faced. Out of 36 nests recorded in this respect, 28 faced approximately east; and, omitting one which had no well defined entrance (48), all nests recorded in four seasons faced toward that quarter of the compass between northeast and south-of-southeast. The strong prevailing winds from the west offer an adequate explanation. No doubt the bird chooses a spot to the leeward of a tuft of grass and stands facing against the wind while scratching the excavation.

Notes.—East (6, 8, 9, 14, 15, 17, 19, 22, 23, 25, 27, 28, 30, 31, 32, 33, 34, 37, 42, 44, 45, 46, 50, 51, 58); slightly north of east (21, 29); slightly south of east (53); northeast (18, 52, 57); southeast (16, 41, 43); south of southeast (40).

**Mud Pellets.**—The first nest examined had pellets of sun-baked mud arranged at the edge of it, some of them closely fitted to the rim, over the bulged body of the nest structure. All nests examined, with only one exception (42), were provided with pellets of dried mud at the entrance or elsewhere around the nest. These are little cakes or broken pieces of the cracked crust which forms on the surface of mud when baked by the sun.

Usually the pellets have either a growth of lichens or a diminutive kind of moss on the side which had been uppermost before they were gathered; but some of them are bare. At two nests all the pellets were bare (a), while at two others all were lichen-covered (b); at three nests bare and lichen-covered pellets were mixed (c); and at two nests some pellets were covered with moss and others with lichens (d). The pellets are used chiefly to cover the loose dirt thrown out in excavating the hole for the nest. Hence they are most numerous at the entrance, on the east side of the nest. At some nests, however, they are used around the rim, and are sometimes very neatly placed and arranged (1). In other instances they are arranged about the edge of the nest on the open side only (6). At an unusual nest which was half above ground, the mud pellets, without lichens, were placed on top of prostrate, green grass blades (29). One other nest had loose pellets on top of the grass at the entrance (58). Nest 32 had lichen-covered mud pellets at both the east and west sides, although the excavated dirt was nearly all on the east side as usual. At nest 53 the birds used a few small irregular lumps of dried mud, instead of the customary flat pellets.

The pellets are sometimes placed lichen-side up, and sometimes bare side up. There seems to be a difference in individuals in this respect, although some nests show no uniformity. All the pellets at nest 30 were placed moss side down, paving the entrance-way on the east side. At nest 51, where more pellets than usual were employed, some were placed lichen or moss side up, while others were rough side up.

On rare occasions small pieces of other material are used in conjunction with the pellets to complete the camouflage. For example, one nest had the dried root-stock of a plant and a flat piece of rock about the size of a dime at the entrance among the mud pellets, which latter were mostly without lichens (43). The nest on cultivated land had pieces of old wheat stubble, together with bare pellets—a combination well suited to the new situation (55). Without doubt, the pellets render less conspicuous the fresh earth removed from the hollow.

Notes.—(a) 29, 55. (b) 28, 32. (c) 25, 41, 43. (d) 30, 51. Mostly moss instead of lichens (30). Few pellets at entrance, mostly bare (41). North of entrance only; few in number (44).

**Form and Dimensions.**—The ground hollow for nest 32 measured 4 inches in diameter by 2 inches deep; the inside measurements of the finished nest were  $2\frac{1}{2}$  by  $1\frac{3}{4}$  inches; hence the maximum thickness of nest wall, near the top, was about three-fourths of an inch, while the bottom of the nest was only about one-fourth inch thick. Nine nests showed mean inside diameters ranging from  $2\frac{3}{8}$  to  $2\frac{5}{8}$  inches (average 2.49); and inside depths from  $1\frac{5}{8}$  to  $2\frac{1}{4}$  inches (average 1.92). The ratio of depth to diameter, referred to as the depth-factor, varied from 0.65 to 0.90 (average 0.77). Two of these nests were  $\frac{1}{4}$  inch longer than wide; one measured  $\frac{1}{2}$  inch longer than wide; the other six were very nearly circular. After the eggs have hatched the nests become enlarged by the growing, squirming nestlings.

#### MCCOWN LONGSPUR

The accompanying table of nests of the McCown Longspur (*Rynchophanes mccownii*), and the progress supplement immediately following, employ the notation previously explained.

Nest No.	First observation		Final observation		Complement	Date of laying final egg (known or estimated)	Nest No.	First observation		Final observation		Complement	Date of laying final egg (known or estimated)				
	Date found	Contents	Date	Contents				Date found	Contents	Date	Contents						
1	1915						1										
1	5-9	4e	5-10	4e	0	4	5-9	Est.	32	6-7	4e	6-8	4e	30	4	6-5	Est.
2	5-12	4e	.....	.....	20	4	5-10	Est.	33	6-8	4e	.....	.....	30	4	6-4	Est.
3	5-13	3e	.....	.....	0	4	5-13	Est.	34	6-10	3e	.....	.....	30	3	6-6	Est.
4	5-13	4e	5-14	4e	0	4	5-13	Est.	35	6-13	4e	6-15	4e	30	4	6-11	Est.
5	5-15	3e	.....	.....	3	3	5-7	Est.	36	6-16	3e2y	.....	.....	5	6-4	Est.	
6	5-22	3e	5-29*	3y	3	3	5-13	Est.	37	6-27	2y	.....	.....	.....	6-9	Est.	
7	5-27	3e	6-5*	3y	3	3	5-22	Est.	38	7-1	3ei	.....	.....	3	7-1	Est.	
8	5-30	4e	5-31*	.....	60	4	5-22	Est.	39	7-1	3ei	.....	.....	4*	6-28	Est.	
9	5-30	4e	5-31*	o	10	4	5-25	Est.	40	7-2	2ei	7-7*	5e	20	5	7-5±	Kn.
10	5-31	4y	.....	.....	4	4	5-10	Est.	41	7-20	3ei	7-23*	3e	.....	3	7-11	Est.
11	6-15	p	.....	.....	.....	.....	.....	.....	42	7-28	4e	.....	.....	30	4	7-24	Est.
12	6-16	1e	6-23	4e	0	4	6-19±	Kn.	43	1917	.....	.....	.....	.....	.....	.....	.....
13	6-22	3e	6-23	3e	70?	3	6-14	Est.	44	5-18	4e	.....	.....	20*	4	5-16	Est.
14	6-23	4e	.....	.....	30	4	6-19	Est.	45	5-19	3e	.....	.....	30	3	5-16	Est.
15	6-27	3ei	.....	.....	.....	3	6-20?	Est.	46	5-26	y	.....	.....	.....	.....	.....	.....
16	6-27	4ei	.....	.....	.....	4	6-20?	Est.	47	6-28	3y	.....	.....	.....	3	6-1	Est.
17	5-12	4e	.....	.....	10*	4	5-10	Est.	48	6-21	y	.....	.....	.....	.....	6-8	Est.
18	5-13	p	.....	.....	4	4	5-19	Kn.	49	7-7	4e	.....	.....	90	4	6-27	Est.
19	5-13	3ei	5-15	3e	40	3	5-10	Est.	50	1918	.....	.....	.....	.....	.....	.....	.....
20	5-18	3e	.....	.....	30	3	5-14	Est.	51	5-22	2e	.....	.....	60?	.....	5-14	Est.
21	5-16	3e	5-19*	3e	30	3	5-16	Est.	52	5-22	3y	.....	.....	.....	3	5-10	Est.
22	5-18	3e	5-19	3e	.....	3	5-13	Est.	53	5-22	3y	.....	.....	.....	.....	.....	.....
23	5-27	3y	.....	.....	3	3	5-11	Est.	54	5-22	4e	.....	.....	40	4	5-16	Est.
24	5-15	o	5-27*	3e	10	3	5-23	Est.	55	5-22	4e	5-26	4e	30	4	5-23±	Kn.
25	6-2	3e	3-5*	4e	20	4	6-3	Kn.	56	5-24	3e	5-26	3e	30	3	5-23	Est.
26	6-5	3e	.....	.....	20	3	6-3	Est.	57	6-4	3e	.....	.....	90	3	5-25	Est.
27	6-5	3e	.....	.....	3	3	5-22	Est.	58	6-4	4e	.....	.....	30	4	5-30	Est.
28	6-6	4e	.....	.....	20	4	6-4	Est.	59	6-28	4e	.....	.....	.....	4	6-26	Est.
29	6-7	4e	.....	.....	30	4	6-4	Est.	60	6-29	4e	.....	.....	.....	4	6-23	Est.
30	6-5	2e	6-7	2e	20	.....	6-4	Est.	60	6-29	o	7-5*	3e	3	7-2	Kn.	
31	6-7	3e	.....	.....	30	3	6-3	Est.	61	7-2	1e	.....	.....	.....	.....	.....	.....

#### PROGRESS SUPPLEMENT

Nest 5.—May 15 (evening), 3e; 16 (7:30 a. m.), 3e; (8 p. m.), 3e; 17, 18, ditto; 19 (10:30 a. m.), 1e, 1y wet, 1y dry; (about 7:30 p. m.), 1e, 2y; 20 (8 a. m.), 3y; 23, 3y; 25, 27, ditto; 28 (evening), y well feathered; 29 (evening), n empty. On May 16 bird absent at 7:30 a. m. and at times of several other visits during day, but was incubating at 8 p. m. Nestling period 10 days.

Nest 6.—May 22, 3e; 23, 3e; 27, 3y (2 or 3 days old); 29, 3y.

Nest 7.—May 27, 29, 30, 3e; June 5, 3y (recently hatched).

Nest 8.—May 30, 4e; May 31, two eggs destroyed and one partly broken showing holes made by teeth or mandibles. Incubation advanced. Nest near ground squirrel diggings.

Nest 9.—May 30, 4e (drilled one, nearly fresh); 31, n empty; shell 3 ft. away showed two tooth-marks, probably ground squirrels.

Nest 10.—May 31, 4y about ready to leave n.

Nest 11.—June 15, p (excavation apparently finished; fine dirt scratched out

among grass at northeast side); 16 (9 a. m.), principal portion of nest material in place but seemingly not ready for lining; 18, nest rummaged on inside (ground squirrels?) and deserted.

Nest 17.—May 12, 4e (incubation more apparent in the heavily marked egg).

Nest 18.—May 13, pg (seems nearly finished); 14 (morning), lining partly in place; (evening), red and white hair in lining, evidently finished; 16 (morning), 1e; 17 (7:30 a. m.), 2e; (7 p. m.), 2e; 18 (6 a. m.), 3e; (6 p. m.), ditto, bird absent; 19 (7 a. m.), 4e; 25 and 26, nest under snow; 26 (afternoon), I uncovered nest and female returned to it; 27, 28, 29, i; 30, 4e warm, bird absent; 31 (morning), bird absent; June 4, 4e; 5, ditto; 6 (morning and evening), 4e warm; 7 (morning), absent; (noon), i; 8 (noon), i; (morning and evening), absent; 9 (early morning), eggs destroyed and nest torn up (skunk?).

Nest 21.—May 16, 3e; 18, 3e; 19, 3e.

Nest 22.—May 18, 3e; 19, 3e one advanced, two infertile.

Nest 23.—May 27, 3y dead (killed by storm) probably hatched about May 23.

Nest 24.—May 15, o; 27, 3e under water (nearly fresh).

Nest 25.—June 2, 3e; 3, 4e; 5, 4e.

Nest 27.—June 5, 3e had been abandoned because of snowstorm, incubation well begun.

Nest 36.—June 16, 3e, 2yi; 19, 1e, 4y, egg infertile (removed); 23, 4y dead as result of storm.

Nest 37.—June 27, 2y with wing quills well sprouted.

Nest 38.—July 1, 3e; 2, 3e; 5, 3e; 10, n empty, no clue.

Nest 39.—July 1, 3e; 2, 3e and a partly emptied damaged shell on ground a foot from nest; 5, 3e (bird not seen); 10, 1e, 2y (hatching); 13, 3y; 19, 3y rather well feathered; 21 (morning), n empty. Nestling period doubtless 10 days.

Nest 40.—July 2, 2e; 6, 5e; 7, 5e.

Nest 41.—July 20, 3e; 21, 23, ditto.

Nest 42.—July 28, 4e, the longest one infertile.

Nest 43.—May 18, 4e, the bluish egg nearly fresh.

Nest 51.—May 22, 3y just hatched.

Nest 58.—June 28, 4e apparently fresh; July 2, 4e; 8, 1e, 3y; 9, 4y (fourth hatched in night); 13, n empty and lining torn out (skunk?).

Nest 59.—June 29, 4e; July 5 (morning), 1e, 3y; (later in day) 4y; 13, y fully feathered; 15 (morning) 4y, but they all left the nest before 3 p. m.; 17 young can fly for short distances. Nestling period 10 days.

Nest 60.—June 29, o; 30, 1e; July 2, 3e; 5, 3e.

Nest 61.—July 2, 1e; 3, 2e; 5, 1e; 6, 1e; 7, empty, no clue.

#### TOPICAL NOTES AND SUMMARIES

**Nesting Dates.**—Nesting begins in the early part of May and continues into July. There are evidently two broods in a season; young birds, able to fly, were observed on the ground close to sitting females at two nests. The distribution of nesting dates during four seasons is indicated in the accompanying summary. In one nest the eggs were hatched on May 19, indicating completion of the clutch about May 7. But a young McCown which was found out of the nest, unable to fly, on May 23 (1915) seemed to evidence an egg as early as the first day of May.

The earliest date for a full clutch of eggs actually found was May 9; the latest date for eggs was July 28 (with incubation about one-third advanced).

#### Four-year Summary of Nesting Dates

First year					June 11 to 20					1 nest
May	1 to 10	4 nests	June	21 to 23	0	June	21 to 23	0		
May	11 to 20	3 nests	June	21 to 23	destructive storm					
May	21 to 31	3 nests	June	24 to 30	1 nest					
June	1 to 4	0	July	1 to 10	2 nests					
June 2 to 4	destructive storm		July	11 to 20	1 nest					
June	5 to 10	0	July	21 to 31	1 nest					
June	11 to 20	5 nests								
June 24	observer left station		Third and fourth years combined							
Second year										
May	1 to 10	2 nests	May	1 to 10	2 nests					
May	11 to 20	5 nests	May	11 to 20	4 nests					
May	21 to 25	2 nests	May	21 to 31	4 nests					
May 24 to 26	destructive storm		June	1 to 10	2 nests					
May	26 to 31	0	June	11 to 20	0					
June	1 to 10	11 nests	June	21 to 30	3 nests					
			July	1 to 10	1 nest					

Note: Figures in the summary show the number of known nests completed in the first, middle and last third of each month. Interruptions caused by destructive storms are indicated for the first and second years. Nesting operations were not arrested by storms during the third and fourth years; hence these years, taken together, show a more significant average.

**Complement.**—The number of eggs in a clutch is usually three or four, rarely five. Three nests were found containing only two incubated eggs or young, but their previous history was unknown. The total count of full sets was as follows: 24 sets of three, 26 sets of four, and 2 sets of five eggs.

**Nestling Period.**—The nestling period was ten days in each of the three nests noted (nos. 5, 39, 59). The young from nest 59 were able to fly for short distances two days after leaving the nest; that is, when they were twelve days old.

**Situation.**—The McCown Longspurs use the same nesting sites as the Desert Horned Larks. They prefer the dry situations. The occasional nests on low ground were probably built in very dry weather.

No nests were found on cultivated ground. A nest was observed in a narrow strip of sod between two wheat fields, at the extreme edge of the grass, against the bare dirt turned over by the plow (55); another was found in a strip between a wheat field and new breaking (42), while another, though in the prairie grass, was near the edge of a wheat field (26). Even more notable was a nest on a narrow dead furrow of prairie sod, missed by the breaking plows, in the middle of a field of winter wheat (57).

Three nests were observed between the roadway fences of infrequently traveled prairie roads (53), one only five feet from the wheel tracks (24).

Although the nests are usually placed without reference to any objects other than the tufts of grass, one of the roadway nests was against a partly buried rock (54). Occasionally nests are placed near old dried heaps of horse droppings; one was a foot away (28), one was quite close (1), one was at the edge of such a point of vantage (19), while another was in the midst of a scattered pile which had become very dry and weathered (34).

**Notes.**—On high ground, top of knoll or ridge (5, 11, 28, 30, 31, 32, 33, 35, 40, 42, 59); slope of knoll (8, 18, 24, 58); low ground, or rather low, but dry (39, 43).

**Concealment.**—The prairie is covered chiefly with short buffalo grass interspersed with a sprinkling of the taller "blue-joint," none of the grass being really tall. Typical nests are not effectually hidden by grasses; but some nests are hard to see (6). A nest may be effectively camouflaged by scant blue-joint grass-clusters slanting over the top of it (22), or by dry blades of grass hanging loosely over it (1). A nest between two small tufts of grass was not easily seen, even at close range (4).

At the other extreme are a few nests quite devoid of concealing vegetation. One, in a grazed pasture, had no standing grass about it—just three or four scant shoots (20). At another the growing tufts near-by had been cropped off by stock (34).

Nests are sometimes built in the middle of a little tuft of grass (28), or have a more or less effective clump of taller or thicker grass at one side. One was at the base of a tuft which grew on the north (31), one had a tuft on the west (24), and another an ineffective small clump of dry grass on the southwest (43). One nest was surrounded by grass, a few spindling little weed stalks and a small low creeping plant (26).

Only one nest showed any indication of a special entrance: it was surrounded by a scrawny growth of moderately tall blue-joint grass with somewhat of an entrance-way at the southeast side (40).

**Notes.**—Sparse tall grass around nest (21, 29, 40, 57). Amid ordinary growth,





Fig. 15. Nest and four eggs of McCown Longspur; nest 59, July 3, 1918.

slightly protected (25, 30, 35, 42, 54); not much protection (17), short tufts (32), scant clump (44); no clump (19).

**Excavation.**—The nests are built in hemispherical hollows in the ground prepared by the birds and the rim of the nest is usually flush with the ground surface. Of seventeen nests especially noted, twelve were even with the ground (a), three were nearly even (b), one had its rim slightly below the surface (20). The rim of one nest was built above ground and was woven into the standing grass, except at one side where the dirt from the excavation had been left among the grass and was partly covered with nest material (12). Two other nests showed fine dirt that had been scratched out among the grass at the northeast side (c). These three were the only nests recorded as showing any indication of dirt that had been removed from the nesting hollows.

Notes.—(a) 1, 4, 17, 19, 21, 22, 24, 25, 28, 42, 43, 44. (b) 40, 54, 55. (c) 11, 28.

**Materials of Nest Structure.**—The composition of thirty-four nests was noted. Thirty-one were composed entirely of dried grasses, including both blades and stems. Some nests were made and lined entirely with old dead grass, somewhat shredded. In one instance the grass was very old and weathered at the rim but not so old beneath (34). The three nest structures not wholly of grass were as follows: The body composed of old weed stems and grass (56); weed stalks used with grass for the foundation or preliminary lining of the ground hollow, but the inner portion

entirely of rather old dead grass (42); nest body of grass and shreds of weed stems, some of them decayed, together with a few roots (24).

Notes.—Entirely of dried grass blades and stems: not remarkably old nor new (1, 2, 3, 4, 17, 19, 25 to 33 inclusive, 35, 44, 53); old (21, 22, 40, 49, 54, 55); old and somewhat shredded (14, 60); some of grasses shredded (12); old and shredded (57); base of old weathered grass (20); very old at rim (34); rather fresh dead grass (43).

Lining.—The lining of the nests is mainly of grass, though occasionally with some slight additions. Ten nests were lined entirely with grass of the same character as the nest body, sometimes old and shredded, sometimes newer and not shredded. In two nests the lining was of finer grass and shreds (24). In one, it was of newer grass than the body structure, somewhat shredded (20). One nest showed a lining of quite new dried grass blades, with a few shreds and a few hairs added (22).

When only one other substance is used in combination with the grass lining it is most frequently a small amount of hair. Twelve nests contained a few horse or cow hairs. In one of these a little bunch of soft brown horse hair had been placed at one spot among the grasses of the lining (35). One nest had a considerable patch of short red hair (4); two contained both red and white hairs in combination. Instead of hair, the second substance may be light shredded plant fibers (a), sometimes soft, silky and matted (b), or soft, white, matted plant-down (29). One nest contained two feathers in the grass lining, which latter was unusual in that it consisted of new dry grass stems and blades (some of the stems split) and a few shreds (21). Another nest was lined in the bottom with the outer husks from wheat stubble (54).

Only three of the nests examined contained two substances in the lining in addition to grass, the second substance being hair in each instance. One of these contained two small bird feathers with only two or three horse hairs (34); another had some newer grass, and in the bottom a few bits of soft plant fiber, and about half a dozen black hairs (40); and the last, a small amount of white rabbit fur and soft brown hair (28).

Notes.—(a) 17, 19. (b) 30, 31. Lining entirely of grass; same as body (1, 26, 44); finer, with shreds (24); newer than body, somewhat shredded (20); rather old (42); old, somewhat shredded (14, 32, 49, 55, 60); blades and shreds (43); shreds (27). Lining of grass with hairs added: few hairs (2); hairs, both red and white (3, 18); some horse hairs (33). Some of the grass old and shredded, with very few fine red hairs (12); somewhat shredded, with very few horse or cow hairs (25).

Form and Dimensions.—Measurements of four nests were taken soon after the eggs had been laid. The internal diameters varied from  $2\frac{3}{4}$  to  $2\frac{1}{2}$  inches (average 2.34); the depths from  $1\frac{3}{4}$  to  $2\frac{1}{4}$  inches (average 1.94); the ratio of depth to diameter, from 0.74 to unity (average 0.83), the depth of one nest being equal to its diameter.

#### CHESTNUT-COLLARED LONGSPUR

In the succeeding table, of nests of the Chestnut-collared Longspur (*Calcarius ornatus*), and also in the supplements, the notation is the same as previously explained.

##### PROGRESS SUPPLEMENT

Nest 5.—May 22 (p. m.), ground hollow found (no loose dirt near); 23 (a. m.), construction of nest begun at rim; 25 (9:30 a. m.), p; 27 (8 a. m.), nest apparently finished; 29 (7 p. m.), 2e; 30 (9:30 a. m. and 8 p. m.), 3e; 31 (8 a. m.), 4e; June 5, nest empty but no clue to marauder.

Nest 9.—June 10, 4e; 13, ditto; 23, 4y, killed by storm.

Nest 10.—June 12, 5e (3 nearly fresh, 2 far advanced).

Nest 11.—June 29 (p. m.), 3ei; 30 (a. m.), 4ei; July 1, 6, 8 and 11, 4e; 12 (early morning), 2e, 2y not yet dry; (mid-afternoon), 1e, 3y; 13 (a. m.), 4yi; 19, 4y (feathered); 20, 3y; 21, ditto; 22, ditto but 1y dead; 23, n empty (2 young few inches away, one of them dead). Period of incubation about  $12\frac{1}{2}$  days. Nestling period about  $10\frac{1}{2}$  days.

Nest No.	Date found	First observation		Final observation		Incuba- tion	Complement	Date of laying fixed or (known or estimated)
		Contents	Date	Contents	Date			
1	1915							
1	5-8	4e	5-9	4e	20	4	5-6	Est.
2	5-14	4e	5-15	4e	0	4	5-14	Est.
3	5-22	4e	.....		60	4	5-14	Est.
4	5-22	4e	5-23	4e	20	4	5-21	Est.
5	5-22	p	*			47	5-31	Kn.
6	5-23	4e	.....		70	4	6-12	Est.
7	1916							
7	6-5	4e	6-6	4e	0	4	6-5	Est.
8	6-6	5e	6-7	5e	10	5	6-5	Est.
9	6-10	4e	*		*	4	6-9	Est.
10	6-12	5e	.....		5	5	6-3	Est.*
11	6-29	3e	*		4	4	6-30	Kn.
12	7-1	5e	7-2	5e	10	5	6-30	Est.
13	7-3	5e	.....		10	5	7-1	Est.
14	7-7	4e	*		4	4	6-29	Est.
15	7-10	4e	*		4	4	7-9	Est.
16	1917							
16	5-17	3(?)	5-19*	4e	0	4	5-18	Est.
17	6-7	5e	.....		0	5	6-7	Est.
18	6-7	2y	*		.....	5	5-17	Est.
19	6-23	5e	.....		5	5	6-20	Est.*
20	7-11	4e	.....		10	4	7-10	Est.
21	1918							
21	6-2	2e	6-6	4e	0	4	6-4	Est.
22	5-22	3e	.....		60?	3?	5-16	Est.

Nest 14.—July 7, 4e; 8, ditto; 10 (noon), 3e, 1y; (evening), 1e, 3y; 11 (morning), ditto; 12 (morning), 4y; 18, 4y; 19, 3y (one died and had been removed by parent), one left nest during afternoon, leaving 2y; 20 (a. m.), 2y; (p. m.), nest empty. Nestling period about 9½ days.

Nest 15.—July 10, 4e; 13 and 16, ditto; 19, 4ei; 21 (a. m.), 2e, 2y; (p. m.), 1e, 3y.

Nest 16.—May 17, 3e?; 18, 4e; 19, 4e.

Nest 18.—June 7, 2y about ready to leave nest when found.

Nest 19.—June 23, 5e (one lightly marked and practically fresh, others well begun).

#### ADDITIONAL DATA

Anomalies.—Nest 1.—Eggs small and nearly spherical.

Nest 9.—Female in approximate male plumage. No fabricated nest structure.

Nest 10.—Unequal incubation in two groups of eggs.

Nest 11.—Death of nestlings without violence.

Nest 14.—Short distance from earlier nest no. 9. Female in approximate male plumage. Death of nestling without violence.

Nest 15.—Female in intermediate phase of plumage.

Nest 19.—Unequal incubation (fresh egg lightly marked). Female in intermediate phase of plumage.

#### TOPICAL NOTES AND SUMMARIES

Nesting Dates.—The nesting season begins early in May and extends into July. The estimated final laying dates for the earliest and latest sets found were May 6 and July 10, respectively. The distribution of dates in the following summary leaves it uncertain whether more than one brood is raised each year. The protracted nesting season may be due to unsuccessful trials.

#### Four-year Summary of Nesting Dates

Month	Period	First year	Second year	Number of nests Third year	Fourth year	Total
May	First third	1				1
	Middle third	2		2	1	5
	Last third	2				2
June	First third		4	1	1	6
	Middle third	1		1		2
	Last third		3			3
July	First third		2	1		3

**Progress of Nest Building.**—The birds evidently dig the hole in which to build their nest; but the method employed and the time required were not determined. On the afternoon of May 22 I discovered a nicely rounded hollow in the ground, amidst the grass (n. 5). There was no loose dirt near it. When I returned the next morning the nest proper had been started at the rim. There were only two weed stems at the bottom of the hole. Two and a half days later, at 9:30 a. m., the entire excavation had been lined with dead grass blades and stems, but the material was as yet rather loose in the bottom, while the rim was apparently finished. The grass material of the rim had been interwoven with the basal stems of the standing grass which grew around the nest. It seems especially noteworthy that the weaving of the rim was the first work done upon the nest structure. By 8 a. m. on May 27 (about four days after construction had started) the nest was apparently finished, with some white hairs added to the lining. The first egg was probably laid early the next day, as there were two eggs on the evening of the 29th, three on the morning of the 30th, and four on the morning of the 31st.

**Complement.**—The complement of eggs is usually four, but not uncommonly five. The foregoing notes record 14 sets of four, and 6 sets of five. One nest was found with only three incubated eggs, but its previous history was unknown.

**Incubation and Nestling Periods.**—The period of incubation observed at nest 11 was about twelve and one-half days.

The nestling period is about ten days. Since all eggs of a clutch hatch the same day, or within two days, continuous incubation apparently does not begin until the set of eggs is either complete or nearly so. When nest 10 was found it contained five eggs in two entirely different stages, three being almost fresh while two were far advanced. In nest 19, four eggs showed incubation well begun, but the fifth egg, which was more lightly marked than the others, was practically fresh.

**Situation.**—The Chestnut-collared Longspurs prefer to nest in the low and slightly moist situations, where the thicker and taller grasses afford adequate concealment. If the meadow is wet or flooded the nests are placed on higher ground but are often near the moist margins. Nine of the nests were either in a low meadow (a) or at the edge of one (b), or slightly up the slope (12); but usually not in a wet place. One of these was on dry ground about twelve feet from the marshy border of Grassy Lake (10). One nest was in a small depression of the prairie which, though previously wet, was dry when the nest was found (16); two nests were in coulees (c). Thus twelve nests out of eighteen were in low places. However, one nest was high and dry on a knoll of the rolling prairie (17), one was on sloping land near a coulee (20), one in a fence border of native sod between wheat fields (21), and one was in a patch of grass on a dead-furrow left by the breaking plows, in the midst of a field of winter wheat which was almost knee high at the time the nest was found (19).

Notes.—(a) 2, 7, 8, 15. (b) 1, 9, 13. (c) 3, 6. On ordinary prairie land (4, 5).

**Concealment.**—The nests are effectually hidden, far more carefully secreted than the nests of McCown Longspurs and Desert Horned Larks. In the moist situations the tall grasses make this easy, but the pairs that nest on the higher ground also find grass clusters adapted for concealment. In general there is no entrance-way to the nest. One nest was open at the southeast side (16), but it was the only one that showed any definite indication of an entrance-way.

Notes.—Thoroughly hidden in meadow grass: surrounded (7); in tuft standing on all sides (1); surrounded, and a thick tuft slanting over (8). Effectually concealed by rather long grass: long tufts of dead grass at sides and leaning across

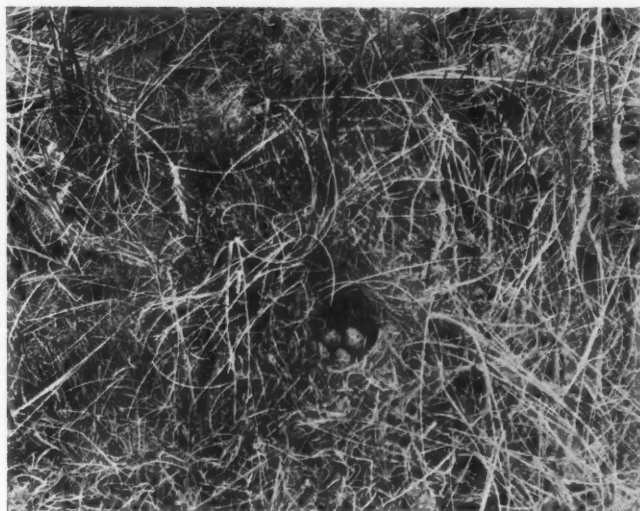


Fig. 16. Nest and eggs of Chestnut-collared Longspur in strip of prairie sod between two wheat fields; nest 21, June 6, 1918.

top (16); in rather tall thick clump (12); among clumps (13). In shorter grass: well hidden by dry and green grasses (17); completely concealed in thick short grass (3); short tufts all around (10); green grass two sides (20); in tuft of prairie grass (21).

**Excavation.**—Although the earth hollow for the nest is no doubt dug by the birds, I was unable to find any loose dirt in the vicinity of the nests examined. The rim of the nest is usually flush with the surface of the ground (a). One nest was deeper (16); another projected above the surface and had its rim interwoven with the bases of standing grass. Other nests were well sunk (b).

Notes.—(a) 1, 7, 8, 10, 17, 19, 21. (b) 3, 4, 9.

**Materials of Nest Structure.**—The body of all nests examined was composed entirely of dried grasses. These grass materials consist of both blades and stems, varying in different nests as to age and texture. One nest was made of old, soft, and shredded grasses (21); others had very old grass around the rim but fresher grasses in the bottom. Old, weathered grass in the rim is clearly an aid to concealment.

Notes.—Body entirely of dead grass: dried blades and stems (1, 2, 3, 4, 5, 6, 7, 12, 13); very old grass in rim (8); old in rim but newer in bottom (16); grass all old (17, 20); soft, old, shredded (21); slightly contracted at rim (10); no nest structure (9).

**Lining of Nest.**—The materials used for linings include grasses, rootlets and hair, in various combinations and proportions. One nest had only some very fine grasses in the lining, with a few old grass blades somewhat shredded (10). In two nests the fine dried grass was combined with a few fine grass rootlets (a). Three nests were lined with dried grass of the same quality as the body of the nest, with a few hairs added (b) — coarse black horse hairs in one instance (2). In one nest, rootlets and hair were combined with finely shredded grass (20), and in another the lining consisted of a few fine rootlets, and white hairs  $1\frac{1}{2}$  inch long (1). Four

other root-lined nests contained no hair. One of these had a complete, thin, inner wall composed almost entirely of fine grass roots, except at the rim where old dead grass was used (19).

Three of the nests may be classed as hair lined (horse or cow hairs). One of these contained some white hair lining (5), one was lined with brown horse sheddings (4), one was so thickly lined with hair that it completely covered the other nest material (6). Yet another pair of birds had lined their nest very nicely with white rabbit's fur (prairie hare or jack rabbit) (3).

In one instance there was no fabricated nest structure, but only a mat of dead grass in the bottom of the excavation; the bare earth formed the only walls (9).

Notes.—(a) 12, 16. (b) 7, 21. Some long hair-like roots in lining (8). Nicely lined with fine roots (13). Lined in bottom with fine grass roots (17).

**Form and Dimensions.**—The nest is a deep, well formed cup, sometimes slightly contracted at the rim. As compared with nests of the McCown Longspur, these nests of the Chestnut-collared are somewhat smaller but of about the same proportions. Diameter (three nests) varies from 2 to  $2\frac{1}{4}$  inches; depth from  $1\frac{1}{2}$  to 2 inches; the ratio of depth to diameter from 0.75 to 0.91 (average 0.82).

*Excelsior, Minnesota, January 10, 1935.*

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## A SECOND AVIFAUNA FROM THE MCKITTRICK PLEISTOCENE

WITH THREE CHARTS

By LOYE MILLER

In 1921 Merriam and Stock announced the discovery of vertebrate remains preserved in asphalt of Pleistocene age at McKittrick, California. Birds from this deposit were made the subject of several papers by Miller (Condor, 24, 1922, pp. 122-124; 26, 1924, pp. 178-180; Univ. Calif. Publ., Bull. Dept. Geol. Sci., 15, 1925, pp. 307-326). The most extensive of these papers appeared after the excavations at the original exposure had been discontinued and the collections made available for study. The source of this material was a lens located on the north side of the Taft-McKittrick highway, its existence being made evident by the road building operations. The avifauna from this first excavation is here designated as Fauna No. 1. Later exploration in the same general locality brought to light an accumulation on the opposite side of the highway and approximately one hundred feet distant from the former exposure. The avifauna of this second excavation presents a totally different picture from that of the first, and it is here designated as Fauna No. 2. This second, and larger, collection constitutes the subject of the present paper.

**Matrix and material.**—The matrix is not appreciably different from that of locality No. 1, that is, crude asphalt with an admixture of fine grained silt. On the whole there may be slightly less silt though there appears to be more than in the matrix at Rancho La Brea. Much more interesting is the better preservation of the enclosed fossils. They retain much more of their original strength. Those from the earlier excavation have a tendency to crumble, as though impregnation with the asphalt had been retarded and perhaps a longer exposure to water had resulted. Preservation of bird remains in the second fauna is quite the equal of that at Rancho La Brea. An attempt was made by the excavator to apply customary methods and



impregnate the specimens with shellac. This effort was, however, entirely wasted as the medium did not penetrate the bone and the specimens retain a remarkable degree of their original firmness without it.

**Comparison of faunas.**—Fauna No. 1 was discussed at some length in 1925 (*op. cit.*) and details need not be repeated here. Outstanding features are as follows:

1. Aquatic species constitute the majority both in variety and in numbers.
2. Raptorial species few and, except for *Aquila*, occur in small numbers.
3. Owls very few.
4. Cathartiform vultures represented by two bones of *Teratornis* only.
5. Gallinaceous birds represented by three bones of California Quail (*Lophortyx*).
6. *Colaptes* absent.
7. Raven represented by two bones.
8. One bone represents the grebes and loons.
9. Gulls, pelicans, and cormorants absent.
10. Mud gathering swallows (*Petrochelidon*) abundant.

So strongly in contrast with this picture is that offered by Fauna No. 2 that some profound environmental factor is definitely indicated.

1. Aquatic species are far in the minority.
2. Raptors are abundant.
3. Owls are well represented.
4. *Teratornis* is represented by 178 bones. *Cathartes* and *Coragyps* are both present. Condors are wanting.
5. *Lophortyx* is represented by 92 bones but no other galliform is present.
6. *Colaptes* is well represented.
7. *Corvus* is abundant.
8. Grebes, loons, cormorants, and pelicans are entirely absent.
9. Mud swallows are present.
10. A large testudinate resembling the present desert tortoise is fairly abundant.

**Ecologic relations.**—Even where the species are common to both faunas their relative abundance often shows a marked diversity and the ecologic balance is therefore quite different. Aquatic species are present in both faunas, but they constitute 67% in No. 1 and 17% in No. 2. The strictly land birds make up 33% of Fauna No. 1 and 75% of No. 2.

There are 35 species in No. 1, 7 of which are unrepresented among the 50 species of No. 2. All of these are water birds. Study of the charts (figs. 17-19 herewith) which present a schematic view of the two faunas will convince one of the radical difference between the two accumulations, and it is the writer's opinion that geologic time is not a factor in the case. Rather, I would say the immediately local conditions are responsible.

Locality No. 1 was postulated as a region of very flat topography with shallow and probably intermittent ponds, extended mud bars and grassy areas. The picture still holds the imagination. Locality No. 2, though but a few yards removed on the horizontal scale, was perhaps a foot or two higher in elevation and hence on better drained ground. Sandpipers may be abundant along the shores of our "desert" ponds; but they would find only a few feet back from shore a desert environment quite foreign to their tastes and they would not be tempted to go there. Deposit No. 1 may have resulted from an oil seep in the margin of such a body of water as the present Buena Vista Lake near Taft, California. This lake may be eight miles across in wet years and only eight feet deep in the deepest part. Such an oil seep might be covered with an inch of water at one time, or might be in the center of

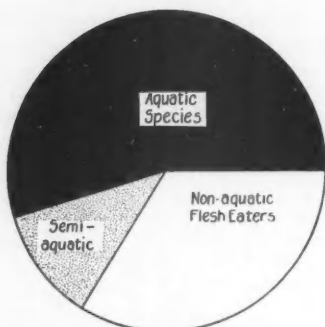


Fig. 17. Chart of Fauna No. 2 of McKittrick showing habits of the species.

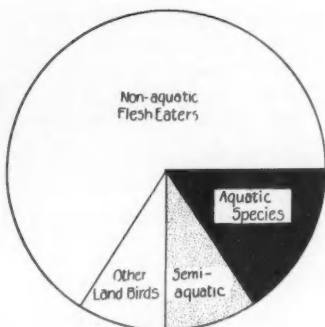


Fig. 18. Chart of Fauna No. 1 of McKittrick showing habits of the species.

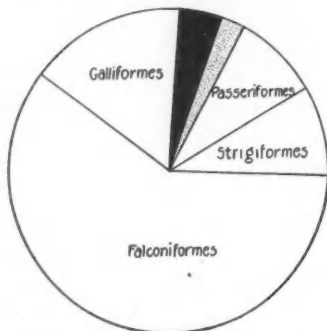


Fig. 19. Chart of Rancho La Brea fauna, Modified from Howard.

an extensive mud flat a few weeks later. A bird like the Golden Eagle would drop down onto the back of a partly submerged carcass, but would become entangled only when, in feeding or in struggling with rivals, it stepped off the carcass into the mire. Cathartiform vultures, on the other hand, habitually alight upon the ground and approach the food on foot instead of from the air. This habit might explain their practical absence from Fauna No. 1.

Fauna No. 2 suggests a quite different picture. It is more nearly a dry land fauna. Water was present at least in small quantities during dry periods when it acted as a lure to quail, doves, *Geococcyx*, and the ground foraging *Colaptes* in considerable numbers. Periods of more abundant water at the immediate locality were shorter owing to its better drainage. The percentage of strictly aquatic forms was thus reduced in comparison with Fauna No. 1. *Teratornis* could alight and amble up to its quarry. Small vertebrates and insects, captured in the oil, would be exposed to view and would tempt the smaller hawks, falcons and owls. The abundant Prairie Falcons and Sparrow Hawks might have been thus brought into the picture. Such a water supply would certainly have attracted *Parapavo* if it had been present in the locality at the time, and I am forced to believe that it was lack-

ing in the local avifauna. There may have been too little cover available for such a large and conspicuous galliform as *Parapavo* must have been. The species is especially abundant at Carpinteria (Miller, Univ. Calif. Publ., Bull. Dept. Geol. Sci., 20, 1931, pp. 361-374) which was undoubtedly provided with cover, and at Rancho La Brea where there was more cover than at McKittrick.

This same factor of cover may easily have been the deciding influence with such raptors as *Spizaetus grinnelli*, *Wetmoregyps daggetti*, and possibly of *Morphnus woodwardi*. The last named species is found in none other than the type locality, Rancho La Brea, which is farthest south of all the asphalt deposits thus far studied; hence the factor of latitude may be largely responsible.

**Time relations.**—Differences between faunas No. 1 and No. 2 are not thought to be the result of a time hiatus. There occur four extinct avian species in No. 1 and eight in No. 2, but all except one of the extinct species of No. 1 are included in the list from No. 2. The additional extinct species of No. 2 are all land birds. Their absence from Fauna No. 1 might readily be accounted for by differences postulated under the heading Ecologic relations.

Dr. Chester Stock has stated to me in conversation that there are "no radical differences in the mammalian faunas of the two localities". Any time hiatus of appreciable magnitude would be indicated by its influence upon mammalian species more than upon avian species. I am therefore strongly of the opinion that the two faunas are chronologically identical.

**Discussion of species.**—In the following list of species I have followed the dictates of the American Ornithologists' Union as announced in their "Check-list", fourth edition, 1931. Determinations are announced with a fair degree of confidence with a few exceptions where, in each case, the uncertainty is indicated. Several species of limicolines are unspecified, owing to a limited amount of comparative material. Dr. Hildegarde Howard and Miss Leigh Marian Larson have passed judgment upon all the *Geococcyx* material, and their kind cooperation is gratefully acknowledged. Material at the California Institute of Technology was generously made available by Dr. Chester Stock, and was examined with some care, but the present report is restricted to the collections at the University of California where over three thousand bones were identified.

#### CICONIIFORMES

*Ardea herodias* Linnaeus, 15 bones.

*Nycticorax nycticorax* Linnaeus, 1 bone.

*Ciconia maltha* L. Miller, 107 bones.

The single specimen of *Nycticorax* appears to contrast strangely with the more abundant *Ardea* and the very abundant *Ciconia*. The last two species are, however, considered less strictly aquatic than other ciconiiform birds in America. *Ardea* habitually seeks grasshoppers, crickets, and rodents in dry stubble fields of present-day California, and the Maguari Stork of South America is said by Hudson to resort to a similar diet on the pampas of Argentina. It is not surprising, therefore, to find the Asphalt Stork present in such numbers. A review of the Pleistocene storks of California (Miller, Condor, 34, 1932, pp. 212-216) eliminates *Jabiru* from our fauna and places all the larger storks in the one variable species *Ciconia maltha*.

#### ANSERIFORMES

*Cygnus columbianus* (Ord). A single metacarpus, almost perfect, represents the Whistling Swan, a bird very little given to wandering far from water deep enough to float it freely.

*Branta canadensis* (Linnaeus)? Five bones represent a goose of the approximate size of *Branta canadensis canadensis*. Tarsus, tibia, and carpus all agree, however, in being stouter than any individual of the Recent race that has been available

for examination. Two other specimens, both left tibiae, represent a pigmy goose, smaller than *B. c. minima* or *Chen rossii*.

Comment has previously been made (Condor, 36, 1934, pp. 178-179) on the variable size of fossil geese in western America. Mr. Roland Ross was encouraged to take up the special problem of variability in the osteology of American geese with a view to the proper determination of some of our questionable fossils. His work is not yet completed, so specific designation of these limited remains is left in question.

*Branta dickeyi* Miller seems not to have any representation in the collection here considered.

*Anas platyrhynchos* Linnaeus. There are ninety-two specimens of this most versatile duck. This same versatility, however, makes it of less significance as an indicator of local conditions.

*Chaulelasmus streperus* (Linnaeus). Represented by five bones.

*Mareca americana* (Gmelin). But seven bones are assignable to this species.

*Nettion carolinense* (Gmelin).

*Querquedula cyanoptera* (Vieillot). These small teals, represented by thirty-four and eighty-one specimens respectively, occupy a large place in the census; but like the mallards, these are very adaptable species. The modern birds are repeatedly to be found in the most limited and ephemeral pond areas. Irrigation canals, out-spreading waste waters, temporarily flooded fields or weed patches in the semi-desert of the Southwest, mere puddles but a few feet across, have within my own experience in the field, attracted many of these little ducks. Their presence in the asphalt certainly indicates water, but not necessarily in large amounts.

*Spatula clypeata* (Linnaeus).

*Nyroca affinis* (Eyton)?

*Charitonetta albeola* (Linnaeus).

*Eriamatura jamaicensis* (Gmelin)? These four species are represented by two to three specimens each, and constitute an insignificant element in the picture.

#### FALCONIFORMES

*Cathartes aura* (Linnaeus).

*Coragyps occidentalis* (L. Miller). The relative abundance of these two species of smaller vulture is directly opposite to their occurrence in Rancho La Brea. There are here, twenty-one bones of *Cathartes*, and but four of *Coragyps*. The element of latitude possibly accounts for the rarity of *Coragyps* at McKittrick, assuming that it was similar in its reactions to the living species, *C. urubu*. Its near relative, *C. shastensis*, was, however, found in the Pleistocene caverns several hundred miles to the northward. The rarity of *Cathartes aura* in the Rancho La Brea fauna has never been explained to my entire satisfaction.

Equally inexplicable is the entire absence of the California Condor, *Gymnogyps californianus*, from both McKittrick faunas. This species was incredibly abundant at Rancho La Brea. In Recent times it has been recorded from the Oregon line to northern Mexico and eastward to Nevada and New Mexico. Its apparent last stand as a declining species is in the broken ranges in sight of the McKittrick locality, and from these mountains it glides out over the lower hills and plains in search of food. Why was it not snared in the asphalt trap along with its greater and its lesser relatives?

*Teratornis merriami* L. Miller. One hundred and seventy-eight bones of this bird bring it up in point of numbers beyond any other species except the eagles. Certainly there was strong attraction at the locality for scavengers of large size and no evident factor in the immediate environment to discourage the condors had they been present. But three bones of *Teratornis* were found in the collection called Fauna No. 1. The cause of the difference is an interesting question. There are now three Pleistocene deposits in California that have produced *Teratornis* remains in fair numbers, and Wetmore (Smiths. Misc. Coll., 85, 1931, pp. 1-41) has lately discovered it in deposits of comparable age in Florida. Other occurrences of the species are not known to me.

*Accipiter cooperii* (Bonaparte). This hawk is primarily a woods or brush-land hunter, hence it is not surprising that no more than two bones are thus identified.

*Buteo borealis* (Gmelin).

*Buteo swainsoni* Bonaparte. In sharp contrast to the Cooper Hawk these buteonids are hunters of the open country. Eighty and fifty-three are the numbers of bones ascribed to them, respectively. In addition there are twenty-six bones of the same genus that are not determined as to species, but might represent either of these two. As in the Rancho La Brea fauna the hawks are less numerous than the larger raptors, a state of affairs which is ascribed either to the antagonism of larger species or to their more frequent recourse to the entrapped or decomposing food supply.

Skeletal characters of the buteonid hawks are so nearly uniform throughout the group that actual size and proportionate size of parts become the main recourse of the student who has to deal with only the skeleton. Based on such characters alone, the typical genus, *Buteo*, reaches out and submerges several of the closely related genera of the ardent systematist. Thus *Geranoaëtus* is left with nothing but its great stature to keep it from complete submergence. The remains of fossil buteons from the asphalt are hopelessly jumbled in the matrix and each bone has to be considered as an entity wholly apart from related skeletal segments; hence the unwillingness to assign certain bones to a specific category.

*Urubitinga fragilis* (L. Miller).

*Aquila chrysaëtos* (Linnaeus).

*Neogyps errans* L. Miller. There are in the collection here discussed more than a thousand bones of raptors of eagle size making up 65% of the entire census. The determinable bones fall into three categories in the following relative abundance: *Urubitinga*, 29%; *Aquila*, 65%; *Neogyps*, 5+%. These figures are strongly in contrast with those obtained from a study of the Carpinteria asphalt (Miller, L., Univ. Calif. Publ., Bull. Dept. Geol. Sci., 20, 1931, pp. 361-374). There, *Neogyps* outnumbered *Aquila* by two to one, while *Urubitinga* (*Geranoaëtus*) is more abundant in one exposure and less in the other.

McKittrick comes thus to resemble Rancho La Brea in sharp contrast to Carpinteria. This resemblance serves further to support the conclusion that Carpinteria was a wooded area at the time of accumulation of its asphalt fauna.

*Neophrontops americanus* L. Miller. It is interesting to find this "Old World" vulture outnumbering two to one the two smaller American vultures, *Cathartes* and *Coragyps*. This creature must have been abundant and versatile in habit. Its remains have appeared in all three of California's asphalt deposits, though it is rare in both faunas at Carpinteria. It is also poorly represented in Fauna No. 1 at McKittrick. Forty-six bones are found in this collection.

*Circus hudsonius* (Linnaeus). Sixty-three bones represent the Marsh Hawk, making the species fit beautifully into the picture which we have reconstructed, of the McKittrick landscape.

*Polyborus cheriway* (Jacquin). This more tropical species is represented by thirty bones including all the characteristic elements of the skeleton. The species is today a most versatile bird, found in open country or in dense cover. It walks or runs readily, but has effective talons. It feeds upon fish, reptiles, birds, or mammals, fresh or otherwise. As might be expected, therefore, its remains have been retrieved from most of the Pleistocene or sub-Recent deposits of the south and west.

*Falco mexicanus* Schlegel.

*Falco peregrinus* Tunstall.

*Falco* indet. As in the Marsh Hawk, the abundant remains of these powerful falcons lend color to the Pleistocene picture. They are hunters of the great open spaces, particularly in the case of *mexicanus* which is by far the most abundant. Sixty-five bones are assigned to that species and fifteen to *peregrinus*. Certain segments of the skeleton of these falcons are readily distinguished, but others are uncertain, just as in the case of *Buteo* discussed above.

*Falco columbarius* Linnaeus. The ten specimens of this small falcon include perfect tarsus, humeri and metacarpus, with parts of tibia and femur, making identification quite certain. The species is one of our rarest falcons in southern California today, and it seems to have been equally so in the past. It was rare at Rancho La Brea and was not found at all at Carpinteria.

*Falco sparverius* Linnaeus. One hundred and two specimens of this species show its great abundance and suggest an adaptability comparable to that of today. Its remains have been found also in: Potter Creek Cave; McKittrick Fauna No. 1; Rancho La Brea; Carpinteria; Saber Tooth Cave, Florida (Wetmore, *op cit.*); and Conkling and

Shelter caves, New Mexico (Howard and Miller, Condor, 35, 1933, pp. 15-18).

*Falco swarthi* L. Miller. Four fragments of a giant falcon are placed in the same category as the type specimen of *Falco swarthi* purely on the basis of gigantism, and they are truly gigantic. Nothing approaching them in size has ever come into my hands before, except a large specimen of *Falco rusticolus* from Greenland. The fossil bird is slightly greater than the Recent specimen from Greenland.

#### GALLIFORMES

*Lophortyx californica* (Shaw). Ninety-three bones of the California Quail bring the Galliformes quite prominently into the faunal picture. It is, however, the only representative of the entire order in the two McKittrick faunas. In Fauna No. 1, there were but three bones. The species aids us quite materially in reconstructing the Pleistocene landscape and throws into sharp contrast the two McKittrick faunas. The absence of the splendid *Parapavo*, so abundant in the Rancho La Brea and Carpinteria faunas, is further emphasized by this evidence. McKittrick Fauna No. 1 was entrapped under conditions that were possibly too humid; but here in the locality of Fauna No. 2 the conditions must have been quite favorable, hence the total lack of *Parapavo* remains is necessarily ascribed to other causes. The bird was apparently absent from the locality and perhaps the most plausible explanation of that fact is that the mountain barrier restrained its northward dispersal from the coastal district.

#### GRUIFORMES

*Grus canadensis* (Linnaeus). The State Game authorities of California have within the last few years made some most interesting moving pictures of this crane at a point only a few miles north of McKittrick. Great numbers of the birds were photographed upon their wintering grounds in flat plains country quite apart from open water. The Pleistocene landscape may quite properly be reconstructed along similar lines and the eighty-six bones of this crane would appear quite in keeping.

#### CHARADRIIFORMES

Slightly more than eight per cent of the determinable bones have been ascribed to the shore birds. Among them are recognized *Eupoda montana* (Townsend), *Numenius americanus* Bechstein, *Totanus melanoleucus* (Gmelin), and *Recurvirostra americana* Gmelin.

Of these, *Numenius* is represented by two bones only, *Eupoda* by seventy-four, and each of the others by half that number. A still larger number of bones remain unassigned to specific category. There are many species of the smaller waders that follow the migratory urge, shifting back and forth over a given locality with the seasons. They are so markedly similar when the entire specimens are at hand, and size is so variable with age and sex, that a mass of unassociated bones representing all the limb and girdle elements is almost impossible of taxonomic analysis. My inability to make satisfactory determinations is freely admitted, but to publish a number of uncertain records is considered a most unfortunate procedure. There are ninety-seven bones of small sandpiper-like birds that are relegated to this indeterminate group.

#### COLUMBIFORMES

*Zenaidura macroura* (Linnaeus). This dove, extremely rare in Fauna No. 1, has a goodly representation in No. 2. There are sixteen limb and coracoid bones. The species is sparingly represented at Rancho La Brea, and it is entirely absent from the Carpinteria faunas. Except at roosting time, these are open-country birds, which probably accounts for their absence from Carpinteria. They were doubtless attracted to the McKittrick locality by an exposure of small pools of drinking water.

#### CUCULIFORMES

*Geococcyx californianus* (Lesson). This adaptable species is well represented in the present connection as compared with a single fragment from Fauna No. 1. Its presence would supplement the quail as indicator of a certain amount of low, though perhaps sparse, cover in the near vicinity. Like quail and doves, the road-runner comes to a source of drinking water when it is available, but decidedly marshy ground is not generally to its liking. One specimen of the femur of maximum size was



examined by Dr. Hildegard Howard for comparison with her lately described species from Conkling Cavern, *Geococcyx conklingi* Howard. The McKittrick bird is, however, quite noticeably slender in comparison with the sub-fossil from New Mexico.

#### STRIGIFORMES

Seven specimens about equally divided between *Bubo* and *Speotyto* constitute the entire strigiform representation in Fauna No. 1. There are fifty-nine in Fauna No. 2, and a third species is added.

*Bubo virginianus* (Gmelin). Twelve bones of this most versatile bird add little in the way of interpretative evidence.

*Speotyto cunicularia* (Molina) (twenty-six bones) is just such a bird as the picture demands. It lives in terrestrial burrows in a terrain entirely devoid of perennial growth. The birds seem to be independent of a free, natural water supply, but those represented in the fossil record were doubtless attracted to the locality by their insect prey.

*Asio wilsonianus* (Lesson) (twenty-one bones) is a species which, when not nesting, ranges from woodland to desert; but some sort of scrub not too far distant is needed as a refuge by day.

#### PICIFORMES

*Colaptes cafer* (Gmelin), with eight bones, is the only woodpecker in the collection. It feeds very commonly on the ground in mountain, hill, or desert country, from timber line to sea shore. I am surprised to find so few of its bones in the collection.

#### PASSERIFORMES

Two hundred and thirty bones are assigned to this order, and one hundred and ten of them are of the genus *Corvus*. The entire collection of passerine material is being studied by Dr. Alden H. Miller, and will be the subject of a separate report.

University of California at Los Angeles, November 16, 1934.

## FROM FIELD AND STUDY

**Ring-billed Gull Killed by a Canada Goose.**—At about two o'clock on the afternoon of December 2 we sat on the stone coping above the narrow beach at Lake Merritt, Oakland, near the feeding enclosure, watching a little group of Canada Geese, Pintail, Baldpate, and Ring-billed Gulls at the water's edge, fifteen feet away. Three of the gulls were squabbling over some floating morsel, and one repeatedly raised its long wings so as to brush the head of the largest "honker," which flinched and backed awkwardly a step or two away. The squabble soon ended, and most of the birds moved off, but the gull rested quietly in the shallows, facing the lake. Then the big goose, too, began to waddle heavily into the water. When still a surprising distance away, its long neck shot down and out and the bill seized the gull by the back, near the base of the right wing. The smaller bird, quite helpless in the grip, was drawn in and the goose began deliberately to beat it to death with blows of the heavy bends of the wings. It was no case of wild flapping and striking, but of controlled blows, for the most part alternate, downward and forward, with the hard wing-bends directed as a man's fists might be. In perhaps thirty seconds the gull was a broken and unconscious mass. One wing was certainly, and one leg almost certainly, broken. After perhaps five minutes it showed some signs of life, raised its head to utter a scream, and turned weakly on the water with feeble movements of one foot, but floated off and could hardly have survived.

The goose, whose movements even during the fight had been lethargic and relatively slow, now gave itself up to transports of excitement. Out on the beach again, it stood with body and neck vertical and wings nearly full-spread, and honked loud and long at the sky. The first call blew out a small cloud of gull feathers. As long as we could make out its progress down the shore it repeated this, at intervals of a minute or two.

It is a puzzle what "set off" the offensive behavior of the goose toward a bird which for a long time previous had been within its reach, both fearless and unmolested.

Given equal power and control, the spurs of a spur-winged goose must be as efficient weapons as any possessed by a bird of equal size.—THOMAS T. MCCABE and ELINOR B. MCCABE, *Museum of Vertebrate Zoology, Berkeley, California, December 15, 1934.*

**The Snowy Egret in Oregon.**—A Snowy Egret (*Egretta thula*) was collected at Nestucca Bay near Pacific City post office, Tillamook County, Oregon, on November 3, 1934. This specimen, a male, was preserved as a study skin, and is number 9510 in my collection. I can find no definite published record of the occurrence of this species in Oregon.—ALEX. WALKER, *Tillamook, Oregon, January 14, 1935.*

**American Golden-eye and American Merganser on Salton Sea.**—On December 8, 1933, Mr. George Willett found a dead immature male American Golden-eye (*Glaucionetta clangula americana*) on the west shore of Salton Sea in Imperial County. On November 11, 1934, Mr. Tom Smith, owner of the Pintail Duck Club, shot an immature female American Golden-eye on his ponds near Mecca, Riverside County. This bird is now a specimen in our study skin collection. Since then we have identified six others in the strings of hunters at this club, and Mr. Smith reports a number of others shot prior to our visits.

On December 2, 1934, an immature male American Merganser (*Mergus merganser americanus*) was shot by Mr. Harry Rau of the Pintail Duck Club, identification being made by Mr. George Willett, who now has the skeleton in the Los Angeles Museum collection. On December 16, 1934, we identified an adult male American Merganser which was shot at the same duck club.—MR. and MRS. BEN L. CLARY, *Coachella, California, December 21, 1934.*

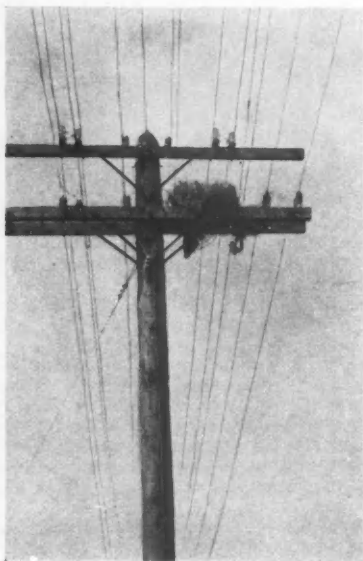


Fig. 20. Nest of Swainson Hawk on telephone pole showing wing of dead male in nest foundation.

**A Swainson Hawk Disaster.**—In 1933 a pair of Swainson Hawks (*Buteo swainsoni*) built a nest on the crossbars of a telephone pole beside the Interprovincial Highway not far from Piapot, Saskatchewan, a not unusual occurrence on the treeless prairie. When I drove past the site on June 10, 1933, and parked on the side of the road a short distance away, the female flew off the nest. She alighted on the ground, picked up a stick in her claws and flew with it to a nearby post. Soon afterward her mate appeared and soared, quite low down, over the nest.

During this time I had examined the nest and discovered that the body of a male Swainson Hawk, dead perhaps a week, formed part of its foundation. The wing of the bird can be seen in the accompanying photograph (fig. 20). The explanation seemed to be that the dead bird, the first of two males, had been shot on the nest, probably with a .22 calibre rifle, following a local custom. Afterwards the female found another mate and proceeded to raise the height of the nest so that the carcass of the first male was built into its foundation.—J. A. MUNRO, *Okanagan Landing, B. C., Canada, August 20, 1934.*

**Breeding Records of the Catbird in Arizona.**—There appear to be no published records for the Catbird (*Dumetella carolinensis*) from Arizona, either as a migrant or a summer resident. We were surprised, therefore, to discover the Catbird well established as a breeding bird, during the summer of 1934, in the vicinity of Springerville, Apache County, east-central Arizona. This region is in high Upper Sonoran Zone, pinyon-juniper association. Several specimens of adult and young Catbirds were collected.

On July 4, 1934, Stevenson discovered a pair of Catbirds in a dense willow thicket along Water Canyon Creek, a tributary of the Little Colorado River, three and a half miles south of Springerville. This locality lies within the Apache National Forest, just south of its north boundary. The area is located on the George Eagar Ranch at an elevation of 7000 feet. An adult female Catbird, with enlarged gonads, was collected. On July 7 we visited the same locality and found an adult bird, presumably the male of this pair, feeding three young just out of the nest. Jenks collected two of the young and later discovered a typical Catbird nest in a gooseberry bush, eight feet above the ground.

On July 14 and 20, we explored a mile of bottomland along the Little Colorado River, four miles west of Springerville, at an elevation of 7100 feet. Catbirds were numerous and were calling from willow and wild rose thickets. We estimated their population as at least twenty individuals along this mile of river bottom. Here, four adults and one full-grown immature bird were collected. All of these specimens now form a part of the Jenks collection at the Arizona State Museum, Tucson.

On August 26, 1934, a single Catbird was found in a willow clump a mile north of Springerville. No birds of this species were discovered later than this date although many favorable habitats were investigated.

In connection with the discovery of this Catbird colony in east-central Arizona it may be of interest to review the status of this species in the southwestern United States. Bailey (Birds of New Mexico, 1928, p. 554) states that "the species is confined in the breeding season to the northern part of the state [New Mexico]," and lists several breeding records. A sight record from Shiprock, extreme northwestern New Mexico, made by Gilman, is included. There are several records for Utah and the bird has been found breeding in the northern part of that state near Woodruff by Dr. Alden Miller (MS). Concerning the occurrence of the Catbird in Nevada, Dr. Jean Linsdale in a letter writes that there is no published record for the state and "apparently its status there is, as in California, as an accidental transient." The only record for California is a specimen taken on the Farallon Islands, September 4, 1884, recorded by C. H. Townsend (Auk, 2, 1885, p. 215).

The authors are indebted to Messrs. J. Grinnell and Jean Linsdale for some of the above information concerning the range of the Catbird.—RANDOLPH JENKS and JAMES STEVENSON, Arizona State Museum, University of Arizona, Tucson, Arizona, October 25, 1934.

**Farallon Rail Nesting Inland.**—The Farallon Black Rail (*Creciscus jamaicensis coturniculus*) has been recorded as nesting only in the salt marshes near San Diego. The taking of birds in the interior of both San Bernardino (Wall, Condor, 21, 1919, p. 238) and Riverside counties (Orn. and Ool., 18, 1893, p. 104) during the summer has indicated that possibly they breed in this vicinity. I was thus not greatly surprised when Mr. Charles H. Bradford of Pomona informed me that he had collected a male bird and set of four eggs near Chino, San Bernardino County, California, on May 4, 1931.

An inspection was made of the eggs by me and they appeared to be much like eggs of this species in my collection, which had been collected in the region of San Diego. Mr. Bradford took me to the site where the set was collected and it seemed to me to be an ideal location, although we saw no more birds. The bird he collected had been presented to Mr. Alfred Cookman, and some months later I was able to inspect the skin and prove that the identification was correct.

It seems that Mr. Bradford was hunting for nests of the Sora (*Porzana carolina*) and Virginia Rail (*Rallus limicola*) when he saw what he took to be a mouse sneaking through the grass. He struck it with a stick which he had in his hand and was surprised to see that it was a small rail. This, of course, prompted careful search and he was rewarded by finding the nest with four eggs. The eggs showed

that they had been incubated for some time and had become addled. The nest was on the damp ground and well concealed in a small clump of sedge growing about in the middle of a small fresh-water marsh. The set is now no. 4948 in my collection.—WILSON C. HANNA, *Colton, California, November 28, 1934.*

**Four New Records from Zion National Park, Utah.**—During the past year of bird study in Zion Park, the writer has noted nineteen forms not previously reported, of which four are somewhat unusual.

*Columba fasciata.* Band-tailed Pigeon. Three individuals seen at water-holes in the yellow-pine scrub-oak forest on Horse Pasture Plateau: two on May 6, 1934, at the ranger station spring, and one on July 1, 1934, at the Potato Hollow spring, two and one-half miles north of the ranger station. The last bird was pointed out to a shepherd who stated that he had seen pigeons at the same place for several years. I later described the birds to Mr. Walter Beatty, cowboy guide, who then stated that he had seen a few on the plateau each summer since 1929. No nests have been seen or reported as yet. Previous records from Utah are meager. Clarence Cottam (unpublished MS, 1927) places it in a hypothetical list with the following comments: "Exceedingly rare and possibly extinct. Johnson (1879) reports it as breeding in the Salt Lake Valley. A.O.U. Check-list of 1910, and Henshaw (1915) refer to its occurrence in Utah." Dr. A. M. Woodbury writes me concerning the single specimen in the University of Utah collection: "... taken at Hanna, Duchesne County, Utah, July, 1930. It was knocked down from a flock by a hawk and picked up by a passing motorist who witnessed the performance."

*Cryptoglaux acadica.* Saw-whet Owl. One specimen was taken on October 15, 1933, near the south boundary of the park (3900 feet) by Mr. E. H. Cantrell, a local taxidermist. Another individual was seen at the same time. I examined the fresh specimen and requested that it be made up as a study skin, but it was unfortunately destroyed by rats before coming into my possession. I have found no published records of this species in Utah.

*Leucosticte* sp.? Rosy Finch. On the morning of November 4, 1934, Mr. L. F. Keller and I noted a flock of one hundred or more birds near the west portal of the Zion-Mount Carmel Tunnel, which, by their characteristic maneuvers and call notes, were immediately recognized as *Leucostictes*. We unfortunately had no means of collecting specimens, but were able to observe several at one hundred feet with 6-power glasses. One of these appeared to be *L. tephrocotis littoralis*, judging by the large amount of light gray below the black frontal patch. The birds were noted at 4900 feet elevation.

*Junco hyemalis.* State-colored Junco. One was seen in a large flock of Shufeldt Juncos at the west boundary of the park on November 2, 1934. It was easily recognized with the unaided eye, and was then studied carefully with the binoculars. It is apparently rare as a winter visitant to this region, judging by its absence from the many flocks of *shufeldti* which were examined last winter.—C. C. PRESNALL, *Zion National Park, Utah, November 27, 1934.*

**Dotterel in Western Washington.**—On September 3, 1934, a female Dotterel (*Eudromias morinellus*) was collected at Westport, Grays Harbor County, Washington. This bird was with a small flock of Killdeer, feeding in a grassy meadow about half a mile from the ocean beach; the grass was closely cropped by cattle. At first the bird seemed quite shy, flying whenever the Killdeer were flushed. I was finally able to separate the Dotterel from the other birds without flushing any of them. The Killdeer were worked off about two hundred yards, leaving the Dotterel where it had lit. I then returned and it was gratifying to be able to approach within easy shooting distance.

This specimen has been kindly identified for me by M. E. Davidson, Assistant Curator, Department of Ornithology and Mammalogy, California Academy of Sciences, San Francisco, California.—D. E. BROWN, *Bothell, Washington, October 15, 1934.*

**Barrow Golden-eye Nesting in Marmot's Burrow.**—In June, 1922, Mr. George N. Gartrell of Summerland, British Columbia, found a nest of the Barrow Golden-eye (*Glaucionetta islandica*) in an unused burrow of the yellow-bellied marmot. The precise locality was Brant's Lake, in the Okanagan Valley. This is a small artificial lake for the storage of irrigation water and is surrounded by low, grassy hills. The

entrance to the burrow was in the earth roof of an abandoned root-house of the type common in this district. These structures are built into a bank and topped with a log roof on which earth is piled. Over this a second board roof, usually open at the ends, is laid. The nest, close to the entrance to the burrow, contained downy young and was detected by seeing a female Golden-eye fly under the roof.—J. A. MUNRO, *Okanagan Landing, B. C., Canada, August 11, 1934.*

**Occurrence of the Saw-whet Owl in Oakland.**—A specimen of the Saw-whet Owl (*Cryptoglaux acadica*) came into possession of the Oakland Public Museum on November 8, 1934. It was through the alertness of Miss Perdue of the Emerson School of North Oakland that the bird was secured. On that date Miss Perdue, attracted by a commotion outside the school, investigated and found that a boy had knocked the little owl from the branches of an acacia tree, injuring it. Taken inside it immediately became an important object; but because of the evident seriousness of the wound the writer was summoned from the Museum to take charge of the unfortunate owl and either aid its recovery or insure its preservation. At first the bird was able to demonstrate some temper and resistance to handling, but it was rapidly growing weaker and in spite of efforts to save it died that same night. As a mounted specimen, however, another and useful career awaits it.—PAUL COVEL, *Oakland Public Museum, Oakland, California, November 26, 1934.*

**Red-tailed Hawk Kills Young Turkey.**—That individuals of the genus *Buteo* sometimes kill small birds seems well known, but that one should become a menace to barnyard fowls is unusual. For several weeks past a large hawk frequently has raided a poultry yard on the outskirts of Flagstaff, Arizona, and a description of the bird given me fits closely that of the Red-tailed Hawk (*Buteo borealis*). This killer is reported to have attacked and killed several chickens weighing about two pounds each. That the attacks of this species are not confined solely to chickens but extend to other domestic fowl is shown by the following account.

Mr. J. D. Walkup states that on October 14 at about 5:30 p. m. at Coyote Range, about one and one-half miles from the yard where the chickens were killed, he personally saw a Red-tailed Hawk strike a young turkey, which weighed about one and one-half pounds, and immediately start to eat it *on the spot*. The turkey was one of a brood of several among a flock of about twelve adults. When the kill was made the mother turkey attacked the hawk and was joined in the attack by the flock which formed a ring around the Red-tail. An adult turkey, from first one side then another, would rush the hawk, striking at it with its wings. The hawk, however, was determined to keep its prize, which it held to the ground with one foot while the bird defended itself with the other foot by striking at the attacking turkeys. Instead of flying off with its prey, the hawk dragged the dead turkey from twenty-five to thirty feet to the base of a large pine tree. Here, with its back to the tree, the hawk faced the noisy and enraged turkeys. All of this Mr. Walkup saw.

Mr. Walkup then went for a shotgun but had to travel on foot for nearly a quarter of a mile before he returned, to find the hawk, still with its back to the tree, defending itself. The hawk saw Mr. Walkup, as he approached with the gun and walked completely around the hawk and turkeys, but paid no especial attention to him. As the turkeys were so close to the Red-tail, Mr. Walkup did not dare to shoot the hawk on the ground nor by shouting could he make it fly, because of the noise being made by the turkeys. A shot into the air, however, sent the hawk flying and another shot killed it.

This specimen was given to me on the morning of October 15. The bird was well fed and apparently was in good health. Plumage markings are suggestive of immaturity and the normal "red" in the tail is lacking. The specimen has been prepared by Mr. J. W. Brewer Jr. and now is number Z8. 529 in the Museum Collection.—LYNDON L. HARGRAVE, *Museum of Northern Arizona, Flagstaff, October 17, 1934.*

**Notes from Central Eastern Arizona.**—During the winter of 1933-34 I took wild-life notes at Eagle Creek in the Crook National Forest of eastern Arizona. The locality where I did most of my observing was well up the stream at about 4900 feet altitude, in the lower portion of the Upper Sonoran Zone. I have scanned my

notes and culled the following records which seem to have special interest from the standpoint of bird distribution.

*Pandion haliaëtus carolinensis*. Osprey. Found two occupied nests, on the top of dead pine trees, May 17, 1934, on Black River, Apache County, at 7000 feet.

*Squatarola squatarola*. Black-bellied Plover. One observed May 18, 1934, on Big Lake, Apache County, in the Candian Zone. There are only two or three records for the entire state.

*Recurvirostra americana*. Avocet. Two observed, May 21, 1934, in the waters of the San Francisco River below Clifton, 3500 feet. It is of interest in this mining region to see shore-birds.

*Pyrocephalus rubinus mexicanus*. Vermilion Flycatcher. March 15 I noted my first Vermilion of the spring. The species is summer resident in what is practically Upper Sonoran Zone.

*Basolophus wollweberi annexus*. Bridled Titmouse. Seen and heard in February in the oaks of West Prong, a tributary of Eagle Creek, 5200 feet. Apparently not previously reported from this area.

*Setophaga picta picta*. Painted Redstart. Saw several, April 15, 1934, at different points in Bear Canyon, 7500 feet, under Rose Peak, Greenlee County. This seems to be a new locality for the redstart in Arizona.

*Icterus cucullatus nelsoni*. Arizona Hooded Oriole. May 5, 1934, I recorded males at Eagle Creek, 4900 feet, Upper Sonoran Zone. The zone is of interest.—CHARLES W. QUAINANCE, Rocky Mountain National Park, Estes Park, Colorado, August 12, 1934.

**A Barn Swallow's Nest on a Moving Train.**—Of the north-bound tourists that throng the Canadian Pacific Steamships to Alaska each summer, a large number continue inland from Skagway to the little town of Atlin in the extreme northwest of British Columbia. To reach there they travel by rail over the White Pass from Skagway to Carcross (Caribou Crossing of former days). At Carcross they embark upon the lake steamer *Tutshi*, and after eight or nine hours of travel up Lake Tagish, they are brought to the portage, across which lies Lake Atlin. Another boat, the *Tahrane*, then takes them over that lake to their destination. Across the two-mile portage a narrow-gauge railroad carries passengers, baggage and freight almost daily during the crowded summer months.

About the buildings at the Tagish Lake end of the line innumerable Barn and Cliff swallows nest. Under the eaves around one of the larger sheds there is an



Fig. 21. Train at the Atlin-Tagish portage receiving passengers. The Barn Swallow's nest was in the baggage car at the extreme left.



uninterrupted frieze of the Cliff Swallows' mud nests. But the really interesting feature of this colony lies in the action of a pair, or more properly a succession of pairs, of the Barn Swallow (*Hirundo erythrogaster*), in nesting on a moving train. For many years past one pair of swallows have built their nests and raised their broods on some part of the train that crosses the portage. They were first commented upon by E. M. Anderson, who, in the annual report of the Provincial Museum of Natural History (Victoria) for 1914 (1915, p. 15), describes the nest as he saw it in one of the coaches. I have seen it on each of the several years that I have visited the region, and in all probability the nesting is an annual occurrence. The train crew take a personal interest in their guests, and for some years the swallows occupied an open cigar box that was fastened for their use under the roof of the open-sided passenger coach. In 1934 the nest was supported near the center and immediately under the roof of the baggage van, the sides of which are protected only by canvas curtains. I had occasion to cross the portage on the evening of June 21. When we embarked at the eastern end the swallows were not at home, but as soon as we arrived at the Tagish terminus both birds swooped into the car. There they settled down for the night, despite the fact that baggage was being piled beneath them to within a few inches of the roof.

I am indebted to a friend, Mr. "Bun" Hillman, of Skagway, for the accompanying photograph of the swallows' home.—H. S. SWARTH, *California Academy of Sciences*, San Francisco, January 10, 1935.

**Barrow Golden-eye Breeding in Yosemite National Park.**—On July 24, 1934, at Table Lake, 7000 feet in elevation, near Piute Creek and about four miles below Benson Lake, members of the Yosemite Field School watched two adult female and one adult male Barrow Golden-eye (*Glaucionetta islandica*) swimming and feeding amid a mass of Indian pond lilies in an ideal nesting ground for this species. When I first discovered them, these ducks were accompanied by two partly grown young that promptly hid among the lily pads. Since these ducklings were not nearly old enough to fly, they must have been hatched at Table Lake.—JOSEPH S. DIXON, *Wild-life Division, National Park Service, Berkeley, California*, October 26, 1934.

**Coots Attacked by Herring Gull.**—A band of Coots (*Fulica americana*) usually winters on Okanagan Lake near Okanagan Landing, living chiefly on *Chara* and horned pondweed. On March 14, 1933, noticing a commotion among the flock, which on this day was feeding close to my house, I moved closer and inspected it through binoculars. It was then seen that a Herring Gull (*Larus argentatus*), a bird probably in its second year, was striking at the coots in much the same manner as a Bald Eagle does under the same circumstances, and the reaction of the coots was identical. That is, they gathered in a dense mass and with necks outstretched surged over the water.

While I was watching, the gull made five separate attempts to seize a coot. In doing so, it circled several times over the packed flock, then plunged down at an angle with wings set and feet extended. After each attempt the gull alighted on the water where it remained only for a moment. After the fifth downward swoop and subsequent drop to the water it made two wide circles over the coots and then flew northward across the lake.—J. A. MUNRO, *Okanagan Landing, B. C.*, August 8, 1934.

**Vernacular Names Again.**—If it is necessary or desirable to have popular names for all subspecies, which I doubt, the proposal of Dr. Grinnell for their logical construction is interesting and would remove at least some of the objections to their use. However, they seem too firmly fixed in usage to be immediately abolished. Anyway, proper formation of subspecific names is not as important and pressing as is the construction of a system of specific ones for those who, for various reasons, are unable to make finer determination. Mr. Anderson's remarks in the November Condor (36, 1934, p. 245) present the case clearly.

The real difficulty in forming such a system does not arise from the uncertainty of our specific concepts, as has been implied. We are of necessity making specific distinctions in every scientific name we use. The decision we are forced to make in the scientific language should be good enough for use in the vernacular. We

may have to reconsider some of these decisions from time to time and make nomenclatural changes to correspond, but comparatively few of them are specific in concept. In any event why should stability in vulgar usage be held more sacrosanct than in scientific language established largely for that purpose?

The real obstacle to the creation of a vernacular system of specific names lies in the practical difficulty of the undertaking. I have had to provide such a popular medium of expression for the forthcoming *Birds of Canada* and have been faced with the difficulty. Ninety-five per cent of the species treated fall naturally into nomenclatural pigeon holes. The remaining five per cent give rise to some unfamiliar and awkward word combinations. If some one would tell me how to designate specifically such forms as *Oceanodroma castro*, *Aimophila aestivalis*, *Tyrannus melancholicus* and some others without violating sensibilities, I would appreciate it. Most of these difficulties deal with species that the more northern amateurs will be little bothered with; but what can be done with such species as *Hylocichla ustulata*? These are problems that have to be faced and if the preliminary results presented do not satisfy the general public all I can say is that if it knows a "better 'ole," let's go to it.—P. A. TAVERNER, Ottawa, Canada, November 29, 1934.

**Bird Records from Northeastern Nevada.**—The specimens listed below were obtained for my collection in the course of a survey of the vertebrate fauna of the Ruby Mountains region in northeastern Nevada. (See Jour. Mammalogy, 15, 1934, pp. 12-44 for accounts of mammals.) Some of the species here recorded are ascribed to Nevada for the first time; others have been observed, some commonly, but for most of them no Nevada-taken specimen is at present easily available to substantiate earlier records. Some of the species were found commonly by us; others were represented by only the single records given here. Identifications were confirmed by Jean M. Linsdale of the Museum of Vertebrate Zoology, to whom I am indebted. Numbers of specimens refer to the Ralph Ellis collection.

*Izobrychus exilis hesperis*. Western Least Bittern. Male (no. 4130) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, July 18, 1927, Adrey E. Borell.

*Cygnus columbianus*. Whistling Swan. Two males (nos. 6788-89) from west side of Ruby Lake, 6 miles north of Elko County line, Elko County, November 5, 1929, A. E. Borell.

*Branta canadensis canadensis*. Canada Goose. Male and female (nos. 6786-87) from west side of Ruby Lake, 6 miles north of Elko County line, Elko County, November 2, 1929, A. E. Borell.

*Nyroca collaris*. Ring-necked Duck. Male (no. 4560) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, December 27, 1927, A. E. Borell.

*Nyroca valisineria*. Canvas-back. Male and female (nos. 4558-59) from west side of Ruby Lake, 3 and 6 miles north of Elko County line, Elko County, December 29 and 31, 1927, Ralph Ellis.

*Charitonetta albeola*. Buffle-head. Two females (nos. 4568-69) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, December 17, 1927, A. E. Borell.

*Erismatura jamaicensis rubida*. Ruddy Duck. Male (no. 6980) from Hobson, south end of Ruby Lake, White Pine County, May 23, 1929, A. E. Borell.

*Lophodytes cucullatus*. Hooded Merganser. Male (no. 4538) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, December 28, 1927, Ralph Ellis.

*Grus canadensis tabida*. Sandhill Crane. Male (no. 5063) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, May 22, 1928, A. E. Borell.

*Totanus flavipes*. Lesser Yellow-legs. Two females (nos. 4158-59) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, August 2 and 8, 1927, A. E. Borell.

*Chlidonias nigra surinamensis*. Black Tern. Two young males (nos. 4054-55) from west side of Ruby Lake, 6 miles north of Elko County line, Elko County, August 2, 1927, Ralph Ellis; female (no. 4121) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, July 19, 1927, Raleigh A. Borell.

*Asio flammeus flammeus*. Short-eared Owl. Male (no. 5105) from north end

of Ruby Lake, Elko County, June 27, 1928, A. E. Borell; male (no 6804) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, October 14, 1929, A. E. Borell; male (no. 6805) from west side of Ruby Mountains, 4 miles north of Lee, Elko County, October 24, 1929, H. H. Sheldon.

*Corvus brachyrhynchos hesperis*. Western Crow. Female (no. 7052) from east base of Ruby Mountains, 20 miles north of Ruby Valley P. O., Elko County, June 29, 1929, Ralph Ellis.

*Certhia familiaris montana*. Rocky Mountain Creeper. Male (no. 4622) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, December 30, 1927, A. E. Borell; female (no. 6849) from west side of Ruby Lake, 3 1/2 miles south of White Pine County line, White Pine County, November 1, 1929, H. H. Sheldon.

*Regulus satrapa olivaceus*. Western Golden-crowned Kinglet. Male (no. 4628) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, December 30, 1927, A. E. Borell.

*Acanthis linaria linaria*. Common Redpoll. Male and female (nos. 6829-30) from west side of Ruby Lake, 3 miles south of White Pine County line, White Pine County, November 2, 1929, A. E. Borell.

*Melospiza georgiana*. Swamp Sparrow. Female (no. 4612) from west side of Ruby Lake, 3 miles north of Elko County line, Elko County, December 17, 1927, A. E. Borell.—RALPH ELLIS, Berkeley, California, January 15, 1935.

**A Note on Passenger Pigeons in the Nineteenth Century.**—The following passage is taken from a book of small circulation, the "Diary of Christopher Columbus Baldwin, Librarian of the American Antiquarian Society 1829-1835." (Worcester, Massachusetts, published by the Society, 1901.) It is under date of January 4, 1830. "Rise early and go hunting all day. Have Asa Hosmer with me, who is a hunter by profession and does nothing else for several years. He tells me that last fall he caught 830 dozen pigeons. Mr. Bryant and John Handcock caught half as many more. They sell for 25c to \$1. a dozen." . . . "I can well remember in the spring of 1811 a flock passed over Templeton that was many hours in sight and so large as to cover the whole horizon. They first appeared a half hour before sunrise and continued till after ten o'clock."

C. C. Baldwin was the son of Eden Baldwin, for whom the village of Baldwinville, Massachusetts, in the town of Templeton, was named. My father, Herbert S. Morley (born 1844), long a resident of Baldwinville, wrote me under date of May 14, 1934, as follows: "When we first came here [about 1870] the 'blind' of the hunters was in evidence near the railroad track. They used to bait the ground and then in some way throw a net over the birds, and then they killed them by crushing in the heads with the ball of the thumb. And George Day told me that when the thumb got too lame Hosmer would crush them with his eye teeth."—S. G. MORLEY, Berkeley, California, January 4, 1935.

**Louisiana Herons on San Diego Bay.**—While taking a bird census around San Diego Bay on December 20, 1934, Mr. Lee Arnold and I saw two Louisiana Herons (*Hydranassa tricolor ruficollis*). They were feeding along the shore of the narrow neck of water separating Coronado and North Island. These I think make a total of six specimens seen in southwestern California, all from San Diego Bay.—JAMES E. CROUCH, San Diego, California, January 5, 1935.

**Virginia Rail in Yosemite Valley.**—Although Grinnell and Storer in "Animal Life in the Yosemite" (p. 260) record the Virginia Rail (*Rallus limicola*) as breeding at Smith Creek near Coulterville, I have been unable to find any record, either published or unpublished of this species in Yosemite Valley. I therefore wish to record that, at a location about the middle of the floor of the valley, along the Merced River, on September 30, 1934, at a distance of from six to ten feet, I cautiously followed and observed a bird of this species. The bird used its bill, which was over an inch and a quarter long, to turn over the dead leaves along a bare moist bank. The rail then deftly picked up the insects and worms which it had thus exposed.—JOSEPH S. DIXON, Wildlife Division, National Park Service, Berkeley, California, October 26, 1934.

**An Albino Arkansas Kingbird.**—Several facts merit comment regarding an albino Arkansas Kingbird (*Tyrannus verticalis*) observed by A. C. Martin and the writer while engaged in waterfowl-survey work five miles east of Martin, Bennett County, South Dakota. The bird was seen at sunset, about 6:10 p. m., September 4, 1934.

The entire plumage, except wings and tail, was pure, clean white; about five of the inner greater wing coverts were broadly tipped with olive brown, the rest of the wing was "pinkish-cream"; tail buffy; both mandibles, tarsi and feet, flesh color; iris light brown.

Apparently the bird was molting. It had only five tail feathers, lacked at least two secondaries, and flew with great difficulty. Yet the plumage of the body itself was noticeably clean and apparently complete.

Its behavior was interesting. In the Condor (36, 1934, pp. 24-27), I have called attention to the seeming nervousness and excessive activity of an abnormal Little Flycatcher (*Empidonax traillii brewsteri*). The most noticeable trait of this kingbird's actions was similarly what might be termed "nervousness." It was somewhat more afraid of us than the normal kingbirds. It searched from fence posts for insects more energetically than others of its species. It was seen to fly after two, with seeming failure. Yet its eyesight was apparently keen enough to discern an insect at least one hundred feet away.

Probably the bird was migrating, inasmuch as inquiry at the farm house where it was first seen disclosed that it had never been noticed except at the same time we discovered it. Light frost had already been reported in the region.

Its lack of color, perhaps, indicated physical weakness. The irregular or defective molt may also have indicated it. The bird's intentness at hunting may have been acquired from the difficulty such a dazzling white creature had in trying to approach insects.

We tried to discover whether new feathers were coming in, of colors normal to the species, but could see none.—WALTER W. BENNETT, *Arnolds Park, Iowa, December 9, 1934.*

**Notes from the Santa Catalina Mountains, Arizona.**—Most of the summer of 1934, from May 20 to August 16, was spent by the author in Carter Canyon, Santa Catalina Mountains, Arizona. Observations on the birds of the region were made at not infrequent intervals, and a few specimens were collected; these are now in the Museum of Northern Arizona. Birds whose total absence is worthy of mention are the Clark Nutcracker, Townsend Solitaire, and Ruby-crowned Kinglet.

*Accipiter velox*. Sharp-shinned Hawk. At least one pair was present in Carter Canyon, May 20 to August 9. Two birds were seen also at Mount Bigelow, July 5.

*Sayornis nigricans*. Black Phoebe. One was seen in lower Carter Canyon, high Transition Zone, on July 2.

*Sitta canadensis*. Red-breasted Nuthatch. Seen not uncommonly from May 20 to August 15 in Carter Canyon; an adult male taken for record on June 7 (M. N. A., no. 727/Z8.400). An adult was seen feeding a young bird on June 17. Noted in Upper Sabino Canyon and Bear Wallow as well, always in the Canadian Zone. William T. Hudspeth also saw two in Bear Wallow on July 31. This is apparently the first breeding record of this species in southern Arizona.

*Cinclus mexicanus unicolor*. Dipper. A specimen was taken in Sabino Canyon ¼ mile below Marshall Gulch on July 25 (M. N. A., no. 727/Z8.403).

*Regulus satrapa olivaceus*. Western Golden-crowned Kinglet. An uncommon summer resident in the Canadian Zone of both Carter Canyon and Bear Wallow, May 20 to July 31. A family was seen being fed in Carter Canyon on June 17, and a juvenal collected for record (M. N. A., no. 727/Z8.401). An adult (M. N. A., no. 727/Z8.407) was taken above Bear Wallow on July 31. This confirms Rhoads' record of a single male seen near Mount Lemmon, July [1?], 1891 (Proc. Acad. Nat. Sci. Phila., 1892, p. 125).

*Vireo gilvus swainsonii*. Western Warbling Vireo. Fairly common summer resident, at least in Carter Canyon.

*Vermivora celata*. Orange-crowned Warbler. A male in breeding condition was taken in a maple clearing in Carter Canyon on June 6 (M. N. A., no. 727/

Z8.399). On June 8 a pair was seen feeding at least two young near the mouth of Carter Canyon, and here the species was seen regularly all summer. They inhabited the willows and alders, and until mid-August none was seen in evergreens, which are the dominant trees. T. T. McCabe has identified the specimen taken as of the race *orestera*.

Visher (Auk, 27, 1910, p. 286) recorded the "Lutescent" Warbler as breeding in the Santa Catalinas, on the authority of Lusk; but as Visher also claimed to have found it breeding on the desert, the record was ignored.—ALLAN R. PHILLIPS, *Cornell University, Ithaca, New York, December 14, 1934.*

## NOTES AND NEWS

The Tenth Annual Meeting of the Cooper Ornithological Club is to be held in Berkeley, Friday and Saturday, May 24 and 25. The Board of Governors and Directors will meet on Friday evening, May 24, at the Faculty Club. A business meeting for members will be held on Saturday at 9 a. m. in the Life Sciences Building, University of California. At this time, matters pertaining to the corporate organization of the Club will be considered, including election of Directors for the ensuing year. Sunday, May 26, is to be free for field trips which the committee on arrangements expects to organize. The scientific program on Friday and Saturday will offer topics of varied interest. Already there are in prospect some excellent contributions. We urge that members favorably disposed begin planning contributions to the program so that they may respond to the call for papers which will be sent out early in April. A large local attendance is anticipated, but we also expect representations from San Diego, Los Angeles, Arizona, Utah and Oregon. Members in the East will find the meeting dates late enough so that attendance can be combined with summer trips at reduced railroad fares.—ALDEN H. MILLER, *Chairman, Local Committee, University of California, Berkeley.*

The Nebraska Bird Review with the issue of last October completed its second volume. Under the accurate editorship of Myron H. Swenk it has established its place among the foremost repositories of current North American ornithology. Number 1 of Volume III, February, 1935, of 48 pages, is literally packed with valuable data concerning the birds of Nebraska, contributed by many observers and organized by the editor into accessible form. We are particularly struck by the record of a "flock of between fifty and sixty"

Whooping Cranes which appeared in the fall of 1934 near the Platte River, migrating south. This is cheerful news concerning a species the future of which has been feared for (but see also Swenk, *Nebraska Bird Rev.*, 1, 1933, pp. 111 ff).—J. G.

Volume II of James Lee Peters' "Check-list of Birds of the World" (Harvard University Press, Cambridge) has been out some months (our copy received June 21, 1934), so that there has been time to put it to practical use. It measures up in all respects to the standards of usefulness set in Volume I (see extended notice in *Condor*, 24, 1932, pp. 93 ff). That volume ended with the Falconiformes. The present one includes the Galliformes, Gruiformes and Charadriiformes; it begins with the Mound-builders and ends with the Tufted Puffin. The marked conservatism Peters shows in the delimitation of genera is again to be commended. For example, in the terns, the Least Tern, Sooty Tern and Forster Tern are all listed under the one genus *Sterna*; and among the auklets, the Crested, Least and Whiskered are all put under the one genus *Aethia*. If a bird student enjoys "reading a check-list," here is one that will afford great satisfaction.—J. G.

The attentive student of natural history, who is also concerned for the permanence of the physical and biotic resources of our land, will find much of both philosophic and economic value in a recent article by Walter P. Taylor entitled "Significance of Extreme or Intermittent Conditions in Distribution of Species and Management of Natural Resources . . ." (*Ecology*, 15, 1934, pp. 374 ff). Briefly, Taylor states that "the growth and functioning of an organism is dependent upon the amount of the essential environmental factor presented to it in minimal quantity during the

most critical season of the year, or during the most critical year or years of a climatic cycle." Among his conclusions as to the practical bearings of this law, he gives this one: "In seasons or years of climatic extremes, more than ordinarily conscientious attention should be given to game protection, grazing by livestock, wild-life relations generally (including the influence of insectivorous birds and rodents, as well as of all other forms of wild life), fire protection, and similar problems. Land-use policies, range administration, forest conservation, and game protection should be adjusted not to average conditions, but to those poorer than average, if not to those that are extreme."—J. G.



Fig. 22. Margaret Morse Nice, author of the *Birds of Oklahoma* and of numerous papers on the behavior of Song Sparrows and Mourning Doves.

Photograph by Bachrach.

Technical Bulletin No. 411, U. S. Department of Agriculture (May, 1934, 82 pp.), is an authoritative treatise which, as indicated by its title, "Western Duck Sickness a Form of Botulism," must prove of prime value to all westerners interested in game preservation. The chief author, Mr. E. R. Kalmbach, of the Division of Food

Habits Research, Bureau of Biological Survey, and his associates spent several seasons in Oregon, California and Utah, studying conditions right on the ground where what was once often called "alkali-poisoning" was manifest. After a full presentation of his subject, Kalmbach states that the one practical remedial measure to be recommended when the disease begins to show itself is to flood the affected mud flats or shallow, stagnant-water areas with deep or flowing water, or else where this is not possible to withhold all water and let those areas completely dry up. The outlook is not encouraging; unless the increasing diversion of water-supply (for irrigation) from favorite wild-fowl areas can be checked—their normal water-supply restored—then "duck sickness will continue to take, even increasingly, its annual devastating toll of western wild fowl."—J. G.

#### PUBLICATIONS REVIEWED

HELLMAYR'S "PART VII" OF THE "CATALOGUE OF BIRDS OF THE AMERICAS" (Field Mus. Nat. Hist., publ. 330, zool. series, vol. XIII, November 15, 1934, pp. vi + 531).—In this exhaustive installment Dr. Charles E. Hellmayr, Associate Curator of Birds at the Field Museum, Chicago, deals with the crows, tits, nuthatches, creepers, wrens, thrashers and thrushes. It thus concerns the systematic status of many of our geographically variable western birds and consequently presses more than most currently appearing publications for detailed notice in the *Condor*.

The general plan of the series, the publication of which was begun by the late Charles B. Cory in 1918, remains about as originally adopted. The synonymies, especially for the South American species and races, are increasingly extensive. Greater pains have been taken to indicate type localities; and in the present installment the location of type specimens is given, whether pertaining to valid names or to synonyms. This must in itself have been a big task, and it has evidently been performed with scholarly care.

A valuable feature of the volume under review is the exhaustive system of footnotes. They occur on practically every page, not infrequently amounting to half the print on the page. In these, the user finds a great deal of critical matter, such as the author's clearly stated reasons why he accepts or rejects dubious forms; de-



scriptions of imperfectly known or rare species; history of type specimens; and sometimes comment of more than systematic interest concerning collectors or describers.

Under the last category may be cited the comment concerning the *Regulus cuvieri* of Audubon, duly figured by this notable in 1829, that this was "probably a fictitious bird;" and the comment concerning *Parus cinctus alascensis* Prazák: "No type exists. The author, who was insane, probably never examined a specimen himself, and based his account solely on the figure in Turner's 'Contributions to the Natural History of Alaska', the locality 'Ochotsk' being in all probability fictitious. St. Michael, Norton Sound, Alaska (ex Turner), may be accepted as terra typica."

We are glad to see that Hellmayr is a technical systematist who is not above supplying vernacular names for each and every species and subspecies he treats of. This is very helpful to a North American, provincial bird student, for instance, who desires quickly to run down some insular or South American form in a group previously unfamiliar to him. True, the author has not been satisfyingly logical in constructing his set of vernaculars; but at least he has done no worse in this regard than the A.O.U. Committee did in its last Check-list!

In extending the artenkreis concept, admirable in itself, to nomenclature, Hellmayr, to my notion, has gone altogether too far. He trinomializes into new name combinations the designations of very many birds we have customarily dealt with in the binomial. For example, he puts the Florida Jay, the Woodhouse Jay and the Santa Cruz Island Jay all in one species with the California Jay. As a result, because the name of the Florida form happens in this series to have been given first, the southern California race becomes *Aphelocoma coerulescens californica* and the Santa Cruz Island bird becomes *A. coerulescens insularis*. He puts our Western Crow in with the European Hooded Crow, as being "clearly conspecific," so that our bird becomes *Corvus corone hesperia*. The Northwestern Crow becomes *Corvus ossifragus caurinus*, however, a double quirk which is not likely to find warm approval among certain of our west-American bird students who have already discussed this case at length. Our Yellow-billed Magpie becomes *Pica pica nuttalli*.

The Oregon Jay appears as *Perisoreus canadensis obscurus*, as long ago (1902) contended by Howe; and I am not so sure but that, in this case, this will prove the best course to follow. The Short-billed Marsh Wren of the East is placed conspecifically with the La Plata Marsh Wren, of South America, and thus becomes *Cistothorus platensis stellaris*. The San Lucas Robin is reduced to the trinomial, *Turdus migratorius confinis*, without any regard, apparently, to the relatively great gap in characters existing between it and the nearest race of American Robin, and to the further fact that not even a "hybrid" between the two has been recorded. The remark is made in a footnote that the San Lucas bird "obviously is merely an excessively pale race of the Robin"—a good demonstration, it seems to me, of what the ultra-trinomial trend will lead to.

The artenkreis concept is helpful to bionomic understanding, but when projected into taxonomic expression it is dangerous for nomenclatural stability—just as the genus concept is; for each is a matter of personal opinion, subject to great variation with the individual worker in accordance with individual experience, temperament and "hunch"! We've got to stick, as nearly as we can, if permanence in names is to be approached closely, to objective criteria for designating species versus subspecies. The criterion of intergradation proven to exist is objective, and it can be used by practiced avian systematists with consensus of decision: in most cases, it will be agreed that two given forms intergrade or they do not—they are to each other as subspecies or as full species. Difficulties remain, of course, on the score of the nature of intergrades, whether hybrids or "true" intergrades; in the latter case whether geographic "blends" or the result of overlapping range of individual variation (illustrated by some island forms).

Curiously, after all the many cases of trinomialization of American forms with related European forms our author balks at our Brown Creeper, calling its races *Certhia americana americana*, *C. a. montana*, etc. In explanation, it appears that there is doubt as to which of the Old World creepers, *C. familiaris* and *C. brachydactyla* (really these are quite close to one another), our bird is derived from. It shares some of the characters of each!

I note that Hellmayr accepts Swarth's recent revision of the Galapagos Island mockingbirds (genus *Nesomimus*) practically without taking any exception. Ap-

parently Swarth quite unconsciously had anticipated the Hellmayrian tempo.

Of more than local interest is the statement (footnote, p. 455) that "the specimens [of *Hylocichla guttata sequoiensis*] recently recorded [in the *Auk*] . . . from Illinois . . . prove, on reexamination, to be worn spring birds of the Eastern Hermit Thrush (*H. g. faxoni*)." This should sound caution to inexperienced bird students against recording supposed subspecies from far outside the normal ranges of those races—without the most authentic determination of them. The more extralimital a subspecific "record," the more dubiety must pertain to it, and the more care must be exercised before launching it.

"Part VII" is edited, I note, by Dr. Wilfred H. Osgood. He has done a difficult job very well—for there can be nothing worse in the proofreading line than long synonymies. I have scrutinized some of these, concerning forms whose literature I know, looking for mistakes—with no satisfaction! Mistakes of any sort, throughout this work, insofar as I have been able to determine, are exceedingly few.

Hellmayr's attitude toward genera is refreshingly conservative. For example, he suppresses *Corthylio* under *Regulus*—very reasonable, it strikes me—with this comment: "The structural differences separating *R. calendula* from the other kinglets seem to me good specific characters, but do not call for generic distinctness [=distinction]." He likewise quashes *Penthestes* and *Baeolophus* under *Parus*, which is pleasing to "oldsters" because it brings us back to the nomenclature of the cheerful 90's. (Incidentally, our Gray Titmouse will have to be called, again, *Parus inornatus ridgwayi* Richmond, because of preoccupation of the name *Parus griseus*.) The only alternative in this group I can see, would be to recognize a genus for each species and be altogether done with the genus-splitting! *Telmatodytes* is submerged in the genus *Cistothorus*, for all the Marsh Wrens. And *Nannus*, for the Winter Wrens, is put back into *Troglodytes*.

Hellmayr's "Part VII," I am probably quite safe in saying, is the most important single work treating systematically of North American birds since the appearance of Part VIII of Ridgway's "Birds of North and Middle America," in 1919.—J. GRINNELL.

## MINUTES OF COOPER CLUB MEETINGS

### NORTHERN DIVISION

DECEMBER.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held on Thursday, December 20, 1934, at 8:00 p.m., in Room 2003, Life Sciences Building, University of California, Berkeley, with about fifty members present and President Pickwell in the Chair. Minutes of the Northern Division for November were read and approved; minutes of the Southern Division for November were read.

The Chair announced the appointment of a nominating committee to present at the January meeting of the Northern Division names of officers to serve the division during 1935; the committee named consisted of Mrs. James T. Allen, chairman, Mr. W. I. Follett, Miss Emily Smith.

Among field notes offered were the following: Dr. George Haley read an item from a Portland, Maine, newspaper describing the discovery of a living Yellow-nosed Albatross beside a Fryeburg pond, the bird's normal habitat being the ocean in the vicinity of the Cape of Good Hope. Mr. Grinnell reported the fact that recently, during a short circuit in Modoc County, Mr. Donald McLean had observed thirty individuals of the Northern Shrike and suggested that Club members be on the alert to detect any stragglers of this species that might reach the San Francisco Bay region. Mr. James Moffitt stated that he had often seen the Northern Shrike in winter in northeastern California, the latest date being the 10th of March, in Honey Lake Valley.

Mr. Dyer asked for suggestions as to the identity of a large black bird with pointed wings which flew slowly and steadily across his view in Piedmont on November 21. The bird was high in air and, soaring in a wide circle, it disappeared. Its call was "*kruk, kruk*." The several members who ventured opinions were inclined toward the raven as identity of Mr. Dyer's bird, a stranger in our region. President Pickwell mentioned a successful method for the photography of shore-birds, stating that recently while on the shore at Santa Cruz he set up his camera for photographing godwits which were scattered along the tide line. His companion circled down the beach and literally herded the birds to the desired point.

The evening was devoted to a discussion

of the bird faunas of three of our State Parks. The first speaker was Mr. Jean M. Linsdale and his area the newly created 400-acre Point Lobos State Park. Here, between the state highway and the off-shore rocks, lies a varied terrain offering food and shelter to birds of the open ocean, shore-birds, meadow inhabiting species, chaparral lovers, and forest dwellers.

Mr. Elmer Aldrich reported upon the Mount Diablo Park and Refuge and told of the 98 species which he had listed during his seven visits to that Park; five more species observed by others give a total of 103 for the area. Along Marsh Creek, at the base of the northern peak, is fine warbler country. Above that, lies the chaparral belt where quail, thrashers and wrens abound, and Bell and Black-chinned sparrows may be searched for. Higher, are the growths of blue oak and digger pine, and at the mountain's top, 3848 feet above sea level, lie the barren ridges where Rock Wrens abound. Just below these, in the hot sun, Mr. Aldrich has observed a Hermit Thrush, lured far from its usual niche by ripening juniper berries.

Mr. Joseph Grinnell considered some of the birds of the new Sonoma Coast State Park, among them the Willow Goldfinches, which in summer are found plentifully up along the hillsides and out through the lupine bushes to the headland, but which are in winter conspicuously absent from their summer haunts. Along all the coast line upwelling air currents give fine opportunity for the soaring of Turkey Vultures and even in midwinter they may be seen. Savannah Sparrows find shelter in the beach grass among the dunes, and along the shore Snowy Plovers seek respite from the gale by crouching in the deep heel prints left by some passing stroller.

Adjourned.—HILDA W. GRINNELL, *Secretary*.

#### STANFORD CHAPTER

JUNE.—The monthly meeting of the Stanford Chapter of the Cooper Ornithological Club was called to order by President Willis H. Rich. The minutes were approved as corrected.

The committee on the Bay Shore Bird Refuge reported that it is still trying to contact Mr. Hunter, chief of the Game Reserves. The following report was made by the nominating committee: President, Dr. Rich; Vice-president, John Price; Secretary, Gladys Relyea. A motion was carried to cast a white ballot for the above officers to serve for the next year. Summer

meetings are to be called at the will of the Chair. It was voted to continue holding regular meetings on the first Thursday of each month. Dr. McCracken was appointed to report to the Chapter on articles which appear in the Auk.

Field observations were reported as follows: Dr. Rich, John Price, and Gladys Relyea observed a colony of 150 to 200 American Egrets nesting at Los Baños, and Mrs. Hackley reported egrets in the rice fields near Chico. Dr. Henderson observed that these birds are increasing in numbers in the West generally.

Mrs. Hackley noted the following birds on a recent field trip near the Stanford Campus: Russet-backed Thrush, Pileolated Warbler, Yellow Warbler, Western Flycatcher, young Black-headed Grosbeak, Robin, Spotted Towhee, Song Sparrow (nesting), Warbling Vireo, Purple Finch, and Lazuli Bunting. She reported Pine Siskins and nesting Lawrence Goldfinches on the San Jose State College campus. John Price noted Lawrence Goldfinches on the Stanford golf course. Reports were made of a snake found on a house top and another robbing a bird's nest. One was seen climbing the wall of the Anatomy Building.

Mrs. M. E. Davidson addressed the Chapter on "Samoa and Its Bird Life." Her descriptions of the islands and their scientific history were very interesting. She described many species, speaking of their habits and exhibiting skins. She told of the various islands and the life of the people who inhabit them.

Adjourned.—ALICE H. BALDWIN, *Secretary*.

OCTOBER.—The seventh meeting of the Stanford Chapter of the Cooper Ornithological Club was held October 18, 1934, at 7:30 p. m., in Jordan Hall, Stanford University. The meeting was called to order by Vice-president Price.

Reading of minutes was dispensed with and Mr. Price introduced the speaker of the evening, Dr. Albert Herre, curator of the Stanford Museum of Natural History.

Dr. Herre gave an interesting talk on the "Birds of the Philippines" and mentioned notable habits, particularly as regards nesting, of birds observed in various parts of the Pacific during his recent travels. He spoke of some of the remarkable features of the Galapagos, center of many excursions of zoological interest, and particularly of the fearlessness of the

birds and animals of this group of islands. He told of the flamingoes of Charles Island, of the penguins that were everywhere, and of the flightless cormorants of Albemarle and Narborough. He stated that there are at least 750 species of birds in the Philippines. *Gallus gallus*, the small fowl, is one of the ancestors of the common fowl. The fruit pigeons, *Zonophaps mindorensis*, *Megapodius cumingi* with their great nests, and the handsome scavenger hawk, *Haliaeetus leucogaster*, were some of the birds described.

Special mention was made of the Indian Cattle Egret, feeding on the parasites of the carabao and acting as an alarm clock for the rest of the population, and of *Pithecopaga jefferyi*, the monkey-eating eagle, the largest of all eagles except the Harpy Eagle of South America.

Adjourned.—I. McCracken, *Secretary pro-tem*.

DECEMBER.—The monthly meeting of the Stanford Chapter of the Cooper Ornithological Club was held December 6, 1934, with President Rich in the chair.

Owing to the resignation of the secretary, Miss Gladys Relyea, a new secretary, Mr. Wilbur V. Henry, was nominated and elected. Minutes of the June and October meetings were read. They were approved as read, with a slight correction.

The committee on the Bay Shore Refuge reported that Mrs. Hilda W. Grinnell, secretary of the Northern Division, indicated willingness to cooperate whenever contact could be made with Mr. Hunter of the California Fish and Game Commission under whose administration the bird refuges come. Dr. Rich informed the Chapter that Mr. Hunter had visited his office at a time when he was not present, and that a definite appointment should be sought with Mr. Hunter.

In the field of literature, Mr. Lastreto called the attention of the group to the availability of Dawson's "Birds of California" at very low prices. Discussion ensued as to the comparative value in school-work of the student's and book-lover's editions of this work.

Field observations included: Mr. John Price observed a California Towhee with one or two white wing feathers near the Women's Gymnasium on the Stanford Campus. Dr. Isabel McCracken asked if any members had seen a white thrasher reported seen in the vicinity of Dr. R. L. Wilbur's home. Dr. Willis Rich reported seeing an English sparrow in Union

Square, San Francisco, with some white feathers in one wing; he also noted that the white herons are back again. Discussion ensued relative to the probable northern limits of occurrence of these birds on the Peninsula. Dr. McCracken reported seeing from 200 to 300 white pelicans near Dumbarton Bridge last summer; her observation was confirmed by Dr. Rich. Miss Baldwin in company with Dr. Loye Miller saw a large number of Wood Ibises in a slough back of Newport Beach, Orange County. Dr. Rich reported seeing cedar waxwings in Palo Alto last July.

Miss Alice H. Baldwin presented to the meeting an interesting account of her work on the Coast Bush-tit. Her talk included the following topics in the life-history of this bird: Flocking habits, song notes, foraging habits, mating, nest building, egg laying, incubation of eggs, and the development of the young. She illustrated her talk with examples of nests, and with lantern slides showing phases of nest building, types of nests, and nestlings of various ages.

Adjourned.—WILBUR V. HENRY, *Secretary*.

#### SOUTHERN DIVISION

OCTOBER.—The monthly meeting of the Southern Division of the Cooper Ornithological Club was held at 8:00 p. m., Tuesday, October 30, 1934, at the Los Angeles Museum, Exposition Park, Los Angeles, with Vice-president Cowles in the Chair and twenty-six members and guests present. Minutes of the Southern Division for September were read and approved. Minutes of the Northern Division for September were read.

The following applications for membership were proposed: Mrs. Munson Deuprey, 1809 Virginia Road, Los Angeles, California, by Miss Miriam S. Faddis; Miss Gretchen M. Lyon, 4156 Dalton Avenue, Los Angeles, and Mr. Frank Richardson, 8193 Magnolia Avenue, Riverside, California, by Dr. Loye Miller; Mr. Sidney D. Platford, 4900 Sixth Avenue, Los Angeles, by Mr. George Willett.

For consideration by members of the Southern Division, Dr. Louis B. Bishop read the content of a letter received from Warren F. Eaton, secretary of The Hawk and Owl Society, Upper Montclair, New Jersey, outlining the plan now being undertaken by the Emergency Conservation Committee to purchase Hawk Mountain, Schuylkill and Berks counties, Pennsylvania, and make of it a sanctuary to pre-

vent further extermination of migrating hawks. It was earnestly hoped that bird lovers and students all over the United States would help to raise the necessary purchase price. Donations in any amount would be gratefully received.

The report of the pathologist with regard to the swelling on the foot of a linnet that had been submitted for analysis by Mr. and Mrs. Michener, was read by Dr. Parsons. Abnormal swellings on the feet of birds are not unusual, particularly on linnets, but this year the disease seems to be quite prevalent. The affliction was diagnosed as a tumor, somewhat akin to an ordinary wart, and due to an infection; it is not malignant. Dr. Parsons also gave some late September record dates for hummingbirds, either Allen or Rufous, seen in Monrovia.

Mrs. Michener spoke of having trapped more Mourning Doves during the past two years than ever before and of having noted that three of these birds were very much smaller than the others. They can readily be distinguished by size, and they appear browner on the back with lighter underparts.

An epidemic of some kind is causing the death of thousands of phalaropes this fall. Several members reported dead birds having been found in great numbers along the coast.

In lieu of a special program for the evening, Dr. Bishop gave a short talk on "Carmel after Six Years." He described to us the area surrounding Carmel which he used for many years as an observation and a collecting field. Cliffs dropping to the sea, to the north a mesa with no trees, hills covered with chaparral, the Carmel River with its many canyons, fir, cypress, and spruce in the mountains, pines on the peninsula, the lagoon near Moss Landing, Elkhorn Slough with its breeding Least Terns, and Carmel Bay itself, gave every possible variety of country one could desire for bird study. Returning this fall after an absence of six years, Dr. Bishop found many changes among the bird population. At Moss Landing, the pelicans and cormorants had decreased greatly. No cormorants were seen on Carmel Bay where they used to be in great numbers. The Heermann Gull, which used to be very common, was not seen, though Monterey Bay was full of Western and California gulls. Ducks were extremely scarce. Fifty Marbled Godwits were seen on the slough, and along the coast some five hundred Sanderlings. Quail were as numerous as

ever. Lutescent, Dusky, and Yellow warblers were seen and, on September 27, from fifty to one-hundred Townsend Warblers. The Winter Wren seemed to be on the increase.

These were but a few of the very interesting comments made by Dr. Bishop on Carmel bird life. At the close of his talk a sketch was shown, made from life, of a hummingbird seen in Carmel. The bird was a female about the size of an Anna, but with strangely different markings, the most conspicuous being that of a white forehead band. Dr. Bishop was not permitted to collect the bird but, from sight observation, his belief is that the unusual color pattern, while hardly to be classified as the result of hybridism, might possibly be that of a very highly plumaged female showing albinism.

Adjourned.—LAURA B. LAW, *Secretary*.

NOVEMBER.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held at 8:00 p. m., Tuesday, November 27, 1934, at the Los Angeles Museum, Exposition Park, Los Angeles. President Abbott occupied the Chair and thirty members and guests were present. Minutes of the Southern Division for October were read and approved. Minutes of the Northern Division for October were read. Names proposed for membership were: Mr. John Raynesford Williams, 801 West Nevada Street, Urbana, Illinois, by W. Lee Chambers, and Mr. William T. Hudspeth, 642 East Second Street, Tucson, Arizona, by Allan R. Phillips.

Mr. Willett, chairman of the committee appointed to study the questionnaire submitted by the National Resources Board, Washington, D. C., with regard to the recreational use of land in the United States, reported that the committee had written to George M. Wright, Director of the Recreation Division, stating that the Southern Division of the Cooper Ornithological Club felt that he was fully qualified to act for them and that any answers or recommendations he might make would meet with their approval.

On motion by Dr. Miller, seconded by Dr. Cowles, and duly carried, the regular meeting date for December was advanced one week because of the Christmas holidays.

On motion by Mr. Willett, seconded by Dr. Miller, and duly carried, the secretary was instructed to write to Dr. William T. Hornaday on the occasion of his 80th birthday, December 1, 1934, and to send greet-



ings from the Southern Division as well as a word of appreciation for his work toward the conservation of wild life.

Mr. Michener, speaking with reference to the Chinese Spotted Doves, said they were first heard in his yard in Pasadena about two years ago, and they have rapidly increased. Banding of them was begun last December, and their records show five banded in the first four months as against twenty-nine in the last three months. Mr. McCoy said he had been feeding the Chinese Spotted Doves at his home in Los Angeles over a period of four years, until within the last few months, when they came in such numbers the neighbors objected. Mr. Pierce reported having seen a Chinese Spotted Dove in Claremont last March for the first time and that in October either the same bird, or another of the species, had again been seen and heard in the same place. Mr. McCoy recalled having seen the species on the Pomona Fair Grounds this September.

Mr. van Rossem asked, "What about the Ringed Turtle Dove?" and said that within the year he had noted the bird in a eucalyptus grove near his home in Altadena for the first time. A single individual seen in Buena Park last year was reported by Mr. Robertson, who also said that some twenty-five years ago he had seen another in the same neighborhood. Mr. Appleton, commenting on the fact that the Ringed Turtle Dove was a resident of park areas and unable to survive very long out in the open, told how thirteen of the birds had been liberated from an aviary and all but three killed by hawks. These three were recaptured and, in a year and a half when they had increased their number to twelve, were again liberated. This time all were killed.

Dr. E. Raymond Hall, visiting member from the Northern Division, was introduced and gave a brief talk on his bird work. Dr. W. A. Hilton, of Claremont, spoke of his trip to Yucatan this summer and of his surprise at the great number of fine songsters heard in the jungle region.

A short but interesting resumé of the meeting of the American Ornithologists' Union held at Chicago this fall was given by Mr. Willett, and his comments were

confirmed—and added to by President Abbott.

Adjourned.—LAURA B. LAW, *Secretary*.

DECEMBER.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held at 8:00 p. m., Tuesday, December 18, 1934, at the Los Angeles Museum, Exposition Park, Los Angeles, with President Abbott in the Chair and twenty-three members and guests present. Minutes of the Southern Division for November were read and, with one correction, were approved. Minutes of the Northern Division for November were read. The application for membership of Irl Rogers, 402 Alturas Avenue, Modesto, California, proposed by E. L. Sumner, was presented through the Western Bird-banding Association.

A letter was read from the secretary of the Pacific Division of the A.A.A.S. requesting that the Cooper Club be represented, if possible, at the meeting of the Affiliation Committee in San Francisco, on January 11, 1935. The motion was made by Dr. Miller that the representative of the Northern Division of the Cooper Club be empowered to act on behalf of the entire Club. This motion was seconded by Dr. Warmer and duly carried.

The death of George L. Kaeding, one of the early members of the Cooper Ornithological Club, was brought to attention. On motion by Dr. Miller seconded by Wright M. Pierce, the secretary was asked to write a letter conveying to Mrs. Kaeding the profound sympathy of the Southern Division of the Club.

Field observations were reported by several members. The question asked by Dr. Warmer, "What will be the effect on birds by our early rains?" brought out an interesting discussion; the consensus of opinion was that shortage of food would have a greater effect on the movement of birds than the condition of the weather.

The Chair announced the appointment of the following members as a nominating committee to propose officers for the Southern Division for 1935: Mr. George Willett, chairman, Mr. J. R. Pemberton, and Mr. Harold Michener.

Meeting adjourned.—LAURA B. LAW, *Secretary*.



